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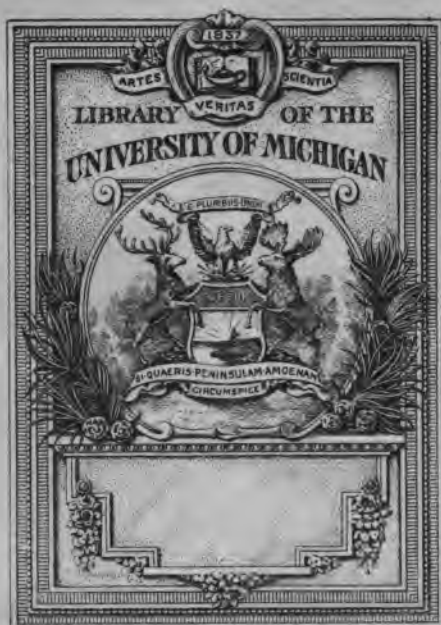
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THE President and Council of the Medical and Chirurgical Society, in laying before the Public, a Fifth Volume of the Medico-Chirurgical Transactions, have the satisfaction of finding, that the expectations which they ventured to hold out relative to an annual publication from the Society, have hitherto been realized. The communications for the present year have been ample and interesting: the correspondence of the Society has increased in extent and importance, and one of the great departments of the State has, with a degree of liberality and public spirit, which the President and Council have great pleasure in acknowledging, imparted to the Society, for the pur-

pose of publication, various important documents relative to diseases in the Army. The two first Volumes have undergone a second edition, and the two others have already had a very extensive sale. The Society, therefore, feel confident, that as long as they shall continue to be actuated by genuine zeal for the advancement of professional science, so long will they continue to experience a corresponding co-operation and support from their contributors and readers.

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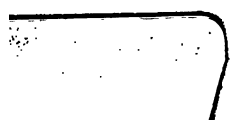
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CASES
OF
PERIODICAL JACTITATION,
OR
CHOREA.

BY ROBERT WATT, M.D.

LECTURER ON THE THEORY AND PRACTICE OF MEDICINE,
IN GLASGOW.

Read February 1, 1814.

WE are informed by Horstius, that some women, whom he describes as being disordered in their minds and affected with a peculiar kind of restlessness in their bodies, repaired once a year to the Chapel of St. Vitus, near Ulm, and continued there night and day leaping and dancing, till they were so exhausted as to drop down almost dead. Thus, continues he, they were restored and continued well till the following May, when the same propensity returned, and required a similar course of exercise to remove it. From this tradition, the convulsive disease to which children are liable, is said to have derived its name; and though considerably different in their phenomena, yet the two affections are perhaps nothing more than different species or varieties of the same disease.

Having lately had an opportunity of seeing one of these restless patients, I was induced to take the following notes of the case; which I now beg leave to submit to the Society. But before proceeding, I may remark, that there appears evidently to be several species or varieties of this disease, all of them characterized by an ungovernable propensity to motion, and all of them removed or mitigated by particular kinds of muscular exertion.

A disease of this kind occurs frequently in the northern parts of Scotland, and is described in the following terms:—"Those affected first complain of a pain in the head, or lower part of the back, to which succeed convulsive fits, or fits of dancing at certain periods. During the paroxysm they have all the appearance of madness, distorting their bodies in various ways, and leaping and springing in a surprising manner, whence the disease has derived its vulgar name "Leaping Ague." Sometimes they run with astonishing velocity, and often over dangerous passes, to some place out of doors, which they have fixed on in their own minds, or perhaps even mentioned to those in company with them, and then drop down quite exhausted. At other times, especially when confined to the house, they climb in the most singular manner. In cottages, for example, they leap from the floor to what are called the baulks, or those beams by which the rafters are joined together,

springing from one to another with the agility of a cat, or whirling round one of them with a motion resembling the fly of a jack*."

Cases of this kind seem to differ in their periods. Some of them are annual, as those described by Horstius: some of them irregular as those in the northern parts of Scotland, and some of them daily or oftener, as in the case I am more particularly to describe. They differ also in the kind of motions performed. In some it consists of every species of exercise that can be conceived, as running, leaping, dancing, tumbling, &c.: in others it consists in a simple repetition of the same thing. In some it appears to be accompanied with symptoms of a convulsive nature: in others the motions appear to be completely or nearly voluntary. Perhaps they differ too in point of age, sex, and various other conditions; but these circumstances seem to be less ascertained. Females, however, are naturally more liable to this affection than males, and of the former chiefly those below the age of puberty. The mind in all cases is probably more or less affected.

The first case is that of Mary Wardrop, aged ten years.—This patient was originally rather delicate, but of a lively active disposition, and

* Edinburgh Medical and Surgical Journal, Vol. III. p. 435, and Statistical Account of Scotland, by Sir J. Sinclair *passim*.

an exceedingly good scholar for her age. It was remarked towards the end of the year 1812, that she was not quite so lively, and looked somewhat paler than usual; but these symptoms were so mild and transitory as not to excite any degree of attention.

On the 1st of January, 1813, she was seized with most excruciating headach, accompanied with almost incessant vomiting. Both of these occasionally suffered a slight abatement, but in the intervals she seemed sick and oppressed, and moaned heavily. She required her body to be kept always in a perfectly erect posture. If even the head was allowed in the slightest degree to recline backwards or forwards, or to either side, it increased the pain so remarkably as to render it intolerable. She never lay down till completely exhausted, and at the very point of falling asleep, and on awaking she instantly started up, and remained all the rest of the time in an erect posture. These symptoms continued four weeks with little variation, but during that time she lost both the power of speech and of walking. About the beginning of February she was seized with a propensity to turn round upon her feet, like a top, with great velocity, and always moving in one direction. This motion was continued from morning till night, and required the constant attention of her friends to keep her from falling. Sometimes her tongue was moved very rapidly backwards and

forwards ; but this appeared to be voluntary and not convulsive. She was always quite sensible ; and during the continuance of this motion, the headach was much abated. She complained of nothing except when interrupted in her incessant motions. She seemed to feel relief, and expressed her satisfaction, when the attendants enabled her to turn round with still greater velocity than she could by her own efforts.

About the end of February the motion ceased, and the headach returned with redoubled violence. At this time, she requested some of her friends to press her head in the most forcible manner, and this appeared to give her some relief. After the violent headach had continued about two weeks, she lost entirely the power of the muscles of her neck, so that the head, when not supported, fell backwards, forwards, or to whatever side the body happened to be inclined. The headach began now to abate, and she recovered her speech so far as to be able to utter a few words, so as to be understood ; but in the end of March she was seized with a new sort of motion, and again lost her speech. She now laid herself across the bed, and turning round like a roller, moved rapidly from the one end of the bed to the other. But as she turned always in one direction, when she arrived at this point she found it difficult to continue the rotatory motion, with that rapidity which she wished. As this circumstance gave her considerable uneasiness,

and as her attendants had seen the relief she seemed to experience from assisting her in her former motions, two of them, one at the head and another at the foot, lifted her regularly from the foot up to the head of the bed, from which she rolled down, and was again lifted up.

The fits continued for about two hours each day, but gradually increasing, they came to occupy six or seven. The assistance she required, being of a very fatiguing nature, and the attendants seeing no end to it, determined to give it up altogether. This distressed her very much, but still she persevered, and came at last to turn round without moving out of the place. The friction produced in this way was so great, that she would wear a stout calico night-gown to pieces in a single day. On one occasion they took her out to the garden, where she rolled rapidly from the one end of a walk to the other. At another time, she was carried out and laid in a shallow part of a river, where she was nearly covered with water. In place of making any effort to get out of the water, where she was almost at the point of being drowned, she began to turn round in the same manner as if she had been in bed. At another time, a large bucket full of cold water was dashed suddenly and unexpectedly on her head and body, while turning in bed, but with no better effect. Though entirely wet, she continued her motions till the usual period.

What seemed most extraordinary in this movement, was, that she made little or no use of her arms in turning: indeed they were often rigidly extended by her sides, as in a case of tetanus. Sometimes the whole body became so stiff as to put almost an entire stop to the motion; but when this went off, which it always did instantaneously, the rolling immediately became as rapid as before. She occasionally seemed to experience considerable difficulty of breathing, and would sometimes turn round from twelve to twenty times without inspiring. What appears incredible, but which can be confirmed by hundreds who saw her, is, that even when left to herself, she would have revolved from fifty to sixty times in a minute, and have continued to do so for the length of time stated, except when retarded by the tetanic rigidity of the body. She continued this motion for six weeks.

About the end of April she was seized in a different manner. She now lay on her back, and by drawing her head and heels nearly together, bent herself up like a bow, then allowing them to separate, her buttocks fell with considerable force on the bed. She lay extended on her back for a moment and then repeated the same thing, and continued to do so at the rate of ten or twelve times in a minute, for six hours at first, but gradually increasing, she at last continued it for fourteen hours a day. This motion continued for about five weeks, and was succeeded by another entirely different.

She was then seized with a propensity to stand on her head in the following manner: resting upon her knees and elbows, she placed the crown of her head a little farther down in the bed than the pillow; she then elevated the trunk and lower extremities directly to the roof of the bed, and rested her weight partly on the occiput, but chiefly on the nape of the neck and shoulders; the chin touching, and seeming rather to rest on the top of the sternum; as soon as the body was elevated in this manner, all muscular exertion seemed to be withdrawn, and it fell down as if dead, the knees first striking the bed, and then the buttocks striking the heels. This was no sooner done, than she instantly mounted up as before, and continued to do so from twelve to fifteen times in a minute, for fifteen hours a day.

Such was her state when I first saw her, early in the month of June. The previous history of the case was obtained chiefly from her father, an intelligent and respectable farmer, in Airshire, a man above the most distant suspicion of any thing like superstitious credulity, fraud, or deception. Previous to this, she had been seen occasionally by Dr. Steel, of Kilmarnock, and some other medical practitioners. Dr. S. advised the parents to send her to Glasgow, and furnished them with a letter to Dr. Cleghorn, and myself, requesting us to examine the case, and also to call in such of our medical acquaintances as we might think proper. *Dr. C. and I* happening to be both out of the

way at the time of her arrival, she was conveyed to the Royal Infirmary, where she remained for a day and a night, and was seen by a number of medical gentlemen. Here she began and continued her motions in the same manner as she had done at home. The day following she was removed to the house of a relative in town, where she continued for other two days and nights, during which time I had several opportunities of seeing her, and making a variety of inquiries, along with Dr. C. and several other medical gentlemen.

Our first visit was in the middle of the day. We were told that she commenced at a precise hour in the morning, and continued till night, that even then she could not stop of her own accord, but by holding her for a few minutes very firmly, the propensity went off; and she became quiet. She was then prevailed on to take a little food, went to bed, and slept pretty soundly. In the morning she had a little food in the same manner, and at eight precisely the motions commenced.

My second visit was at eleven o'clock at night; she was then going on as we had seen her. One difference, however, was pretty obvious. In the earlier part of the day she elevated both limbs equally, or nearly so, and each time pointed them directly to the roof of the bed. In the evening the left limb was elevated more feebly, and fell considerably short of the perpendicular. We were

told that this difference in the two limbs was scarcely perceptible in the morning, but increased gradually towards night. Some evenings the left limb was not elevated above half way, between a horizontal and perpendicular posture.

The hour was now come for putting a stop to the motions. Her father applying a hand to each side of the chest, lifted her suddenly from the bed, and sitting down, placed her on his knee, and held her fast. For a few minutes, perhaps from five to ten, she struggled very violently, like a child in a passion, forcibly held against its will. The struggle gradually subsiding, she became composed, sat still, and received a little food. The manner of giving the food was to break down the bread into small portions, and put it into her mouth. She fretted every time it was presented; and though she opened her mouth, it was with obvious signs of reluctance. She chewed it with a sort of convulsive rapidity, and swallowed it as a child would swallow a dose of physic. Her food was chiefly a few bits of oatmeal cake, with a little butter, cheese, or ham, and a small quantity of milk. She never took either food or drink except at this time, and immediately before the motions commenced in the morning.

I have mentioned the manner in which a stop was put to the motions in the evening. While we were present in the earlier part of the day, at the

desire of some of the medical gentlemen present, a similar attempt was made. Her father took her up, and held her firmly in his arms, during which she continued to struggle with a degree of fury and desperation, which I would compare only to the rage of the wildest animal I had ever seen held in a similar manner. The attempt was made for a considerable time, but with no abatement in her struggles for liberty. Indeed her father told us, that on former occasions, it had been tried for a much longer period, and accompanied with threats and even harsh usage, but without effecting any sensible change.

After the period at which her motions were to cease had been ascertained, it was thought advisable to try whether by making it a few minutes earlier each night, the time might not be materially shortened. An attempt of this kind was made a little before she was brought to Glasgow. The first night she was taken up ten minutes earlier than the night before. She struggled a little harder and longer than usual, but at last became composed. The next night other ten minutes were taken off, but she struggled as if she had been taken up in the middle of the day. After continuing the contest for almost an hour without any prospect of success, she was laid down, when she instantly began her motions, and after continuing them for about two hours, she was again taken up in the usual way, and became quiet; but did not

recover entirely her ordinary degree of composure through the whole night.

It was next suggested to allow her to go on till she stopped of her own accord. This experiment was tried a short time after the former. She was first allowed to continue her motions three hours later than usual, after which she did not sleep till she began again in the morning. She continued all the next day and night till within an hour of the time when they usually came on in the morning. She was then stopped, having neither tasted food or drink for twenty-four hours. After taking a little food, as usual, and appearing as if she would have fallen asleep, at the precise time, the propensity returned, and she continued her motions for other fifteen hours without intermission, and without the least apparent fatigue more than usual, at which time she was stopped in the usual way, took a little food and went to rest.

My next visit was in the morning between seven and eight. I found her seated upon her father's knee: she seemed composed, but so timid that I could hardly obtain a sight of her face, and on the least attempt to obtain a sight of her tongue, or of her eyes, she became greatly distressed and agitated. Her pulse was pretty regular and about 90 in a minute; but she would hardly allow us to feel it distinctly. Her eyes so far as I could discern, appeared clear and lively.

After these examinations, the conversation turned upon something else, and nobody seemed to be paying any attention to her; but a few minutes before the expected attack, she began to shew signs of uneasiness. She moved her head in various directions. A sort of distortion of her features seemed to indicate a considerable degree of internal agony. Her lower extremities too suffered occasional spasmodic contractions, and now and then convulsive twitchings and startings. At last as if terrified out of her senses, or in a fit of desperation, she began to grapple and struggle with her father, in the same manner as when he attempted to lift her out of the bed the day before. He now threw her gently upon the bed, when she instantly got upon her hands and knees, and, after an adjustment or two, placed her head in a proper position, and began to throw up her body and limbs as I have already described. For a short time she appeared to be hurried and agitated; but after about a quarter of an hour she went on in the most cool and deliberate manner. She seemed to pay attention to nothing; but this was not really the case, for if any thing was said with regard to herself, such as the giving her medicine, and still more particularly any proposal to stop her motions, she instantly began to whine and fret.

The precision with which she began at a particular hour in the morning, appearing to some people very extraordinary, a variety of attempts

were made to find out the cause. The clock was altered and sometimes stopped altogether. On other occasions the light of day was excluded, and candles kept burning as if it were still night; but none of these stratagems seemed to have the least effect in altering the periods.

It was their general practice to awaken her about an hour before the expected attack, if she did not awake spontaneously, which was for the most part the case. This was done that she might have time to take a little food. They were advised not to awaken her, to see if she would sometime or other oversleep herself. One day she did not awake till within a few minutes of the hour, and her awaking then seemed to be in consequence of the uneasy premonitory symptoms coming on. At the precise time she began her motions as usual, and continued till the ordinary hour in the evening, without taking either food or drink.

In some of her former motions, she seemed to be much hurried and agitated, but in the present paroxysm, when left to herself, she went on in the most cool and deliberate manner, like a child playing itself at its ease.

From the time she began the present species of motion, there were always one or more persons beside her. It was suggested to try what effect it would have to leave her alone. This experiment was tried *some time before she came to Glasgow*. Without

any previous notice, all the attendants slipt out of the room and left her. It was sometime before she seemed to miss them. She was then seen to look about, but continued her motions. After some time finding the room still empty, she stopped for a minute and looked round her. She then went on without seeming to give herself any farther concern. After this she would pass nearly whole days without being spoken to, or the least attention paid to her. She never seemed to be so happy and contented as when entirely left to herself, nor so unhappy as when any person attempted to obstruct her motions.

In some of her former paroxysms, particularly the one before the present, she seemed to notice what was going on about her, was pleased with the presence of her former companions, would have taken their playthings into her own hands, and examined them with care and apparent satisfaction, and yet all the while the motions were going on with undeviating regularity. At present she made no use of her hands, and seemed to pay no attention to any thing, except when she heard some proposal respecting herself.

She was remarkably attached to her father, and seemed to be more happy under his charge than that of any other person. She was also fond of her mother, but as she had a young family to attend to, the father was the chief attendant.

She generally voided her urine before she began her motions in the morning, and after she was stopped at night, but she required likewise to do it through the day. This seemed to give her great distress. After feeling the desire, she began to whine and fret, but still continued the motion. At last when it could be no longer retained, and when she began to feel her clothes getting wet, she was excessively distressed and uneasy, and generally did not recover her composure for the rest of the day. After some time, the attendants, when they perceived those signs of uneasiness coming on, drew her forcibly to the bed side, and held her fast till this operation was accomplished. Although she wished this to be done, she struggled a good deal, and if they attempted to keep her a single moment longer than was necessary, she became quite outrageous.

Her bowels of late had been excessively constive. She generally had no motion except in consequence of an injection. Innumerable attempts were made to remedy this by different kinds of purgatives, but it was found very difficult, if not impossible, to make her take any. Even calomel, concealed in the most secret manner, could hardly escape her detection. It had, however, at times been given to such an extent as to affect her mouth, as well as to make a considerable impression on her bowels.

Her body was greatly emaciated, though not so much as might have been expected, from the violent exercise and the small quantity of food she took. Her skin was harsh and dry, and her extremities generally cold.

Besides the remedies I have mentioned, a variety of others were tried during the course of her illness. An emetic was given at the commencement. She was three times blistered on the head. Her bowels had been violently purged for several weeks. The cold bath had been persisted in for six weeks. A seton was inserted in her neck, and kept discharging for a considerable time. Leeches were applied to the temples. Gestation in an open cart was tried on one or two occasions. It was after an excursion of this kind, that she was seized in the night with the second kind of motion the turning round in bed like a roller. She seemed to experience no sort of relief from any thing that was tried.

She had been brought into Glasgow during the night, in an open gig, and returned home in the same manner. The day following, she was seized with a spontaneous diarrhoea, and soon after that she became more tractable. She took any purgative that was prescribed, and as often as they chose to give it to her. In two weeks the motions became more slow and languid, and the difference of elevation between the right and left leg

was still more remarkable. Her father now attempted to put a stop to the paroxysms before the usual period, and succeeded. She continued sick and distressed all night. Next morning, when the motions should have begun, she expressed a wish to go to bed. For some time she kept her bed pretty constantly, but began to show signs of amendment, and never afterwards had any more of the motions. In the course of a few weeks she recovered her speech completely, and also her former health, strength, and spirits; and has continued perfectly well ever since. If any difference, her parents think her now more affable, active, and intelligent than ever.

During the whole illness, the mind seemed to be affected nearly in the same manner as we find it in common cases of chorea. This was more especially the case towards the latter part of the complaint. After the occurrence of the diarrhoea, she became more sensible, and was much more easily persuaded to do any thing which was judged necessary. As purgatives had been strongly recommended by most of the medical gentlemen who saw her, these were diligently applied, and operated powerfully, and I have no doubt contributed materially to her complete recovery. The disease may perhaps have a tendency to run a definite course, and cease spontaneously. On the other hand, the same medical treatment which seemed void of efficacy at the beginning, may have proved

beneficial at a more advanced stage, and I cannot help thinking that the present case goes a considerable length in proving the expediency of Dr. Hamilton's purgative plan in Chorea, and similar affections.

Since her recovery, innumerable attempts have been made to ascertain if she recollects what passed during her illness, and what ideas she entertained at the time, but she has always shown the utmost reluctance to speak on the subject. She has however on various occasions, especially among her companions, inadvertently mentioned so many circumstances which occurred during her illness, that her friends have no doubt of her remembering distinctly every thing that happened, even when she was at the worst.

For the account of her situation since she left Glasgow, and also for some particulars respecting her former history, which had escaped me, I am indebted to my late pupil, Mr. Andrew Lindsay, now surgeon at Galston. The whole statement, as now drawn up, has been submitted to her parents, and has received their corrections and approbation.

Another case, similar to the one I have related, occurred some years ago, in the parish of Dalry, in Airshire. The subject was a young female. I do not know how long her illness continued, but

she ultimately recovered completely. I have been informed of a third in the neighbourhood of Air, but of her case I have heard no particulars. A very remarkable case, perhaps somewhat similar to the one I have described, occurred at Bargarran, in Renfrewshire, in 1696. The patient's name was Christian Shaw, a girl of eleven years of age: she is described as having had violent fits of leaping, dancing, running, crying, fainting, &c., but the whole narrative is mixed up with so much credulity and superstition, that it is impossible to separate truth from fiction. These strange fits continued from August 1696, till the end of March in the year following, when the patient recovered. An account of the whole was published at Edinburgh, in 1698, entitled, "A True Narrative of the Sufferings of a Young Girl, who was strangely molested by Evil Spirits, and their instruments, in the West, collected from Authentic Testimonies."

The whole being ascribed to witchcraft, the clergy were most active on the occasion. Besides occasional days of humiliation, two solemn fasts were observed throughout the whole bounds of the presbytery, and a number of clergymen and elders were appointed in rotation, to be constantly on the spot. So far the matter was well enough. But such was the superstition of the age, that a memorial was presented to his Majesty's most honorable privy council, and on the 19th of January,

1697, a warrant was issued setting forth "that there were pregnant grounds of suspicion of witchcraft in Renirewshire, especially from the afflicted and extraordinary condition of Christian Shaw, daughter of John Shaw, of Bargarran." A commission was therefore granted to Alexander Lord Blantyre, Sir John Maxwell, Sir John Shaw, and five others, together with the sheriff of the county, to inquire into the matter and report. This commission is signed by eleven privy counsellors consisting of some of the first noblemen and gentlemen in the kingdom.

The report of the commissioners having fully confirmed the suspicions respecting the existence of witchcraft, another warrant was issued on the 5th April, 1697, to Lord Hallcraig, Sir John Houstoun, and four others, "to try the persons accused of witchcraft, and to sentence the guilty to be burned or otherwise executed to death, as the commission should incline."

The commissioners, thus empowered, were not remiss in the discharge of their duty. After twenty hours were spent in the examination of witnesses, and counsel heard on both sides, the counsel for the prosecution "exhorted the jury to beware of condemning the innocent; but at the same time should they acquit the prisoners in opposition to legal evidence, they would be accessory to all the blasphemies, apostacies, murders, tortures, and

seductions, whereof these enemies of heaven and earth should hereafter be guilty." After the jury had spent six hours in deliberation, seven of the miserable wretches, three men and four women, were condemned to the flames, and the sentence faithfully executed at Paisley, on the 10th June, 1697.

Though we cannot confidently boast of the powers* of medicine in this disease, yet we may flatter ourselves that this narrative may not be without its use, by putting the last hand to the *cure* of a malady of the mind, which in past times has led to such tragical incidents; and we may be permitted to congratulate ourselves on our lot being cast in an age of the world, in which, from the progress of science, even the lowest orders are in a great measure delivered from the degrading dominion of a superstition† with which the higher orders, nay,

* Since this article was drawn up, it has been suggested by a friend of the author's that in case of the recurrence of a similar disease in future, some benefit might arise from keeping the patient awake as much as might be consistent with safety. He grounds this proposal on the view he takes of the nature of the disorder as consisting in a superabundance of that principle, whatever it is, by which the voluntary action of muscles is supported, by the exhaustion of which fatigue is induced, and the re-production of which is effected by sleep.

† A similar instance of the correction of popular errors, by the lights of knowledge, may be adduced in the gradual extinction of the belief in ghosts, with which the human mind has so long been disturbed. A very ingenious and interesting tract, on
this

the judges of the land, were infested at no very distant period of our history.

this subject, appeared in the year 1810, in the *Edinburgh Medical Journal*, by Dr. Alderson, of Hull. This branch of superstition, as well as that adverted to in the text, is there very fairly traced to morbid affections, and affords another proof and example of the beneficial influence of the diffusion of natural knowledge, particularly of that which regards animal nature, on the dignity of the human character, as well as on the happiness of social life, in all ranks of the community.—See more on this subject in the 4th Vol. of these Transactions, p. 104.

CASE
OF
ABSCCESS IN THE BRAIN.

By ALEXANDER DENMARK, M.D.

SURGEON TO THE ROYAL NAVAL HOSPITAL AT HASLAR.

COMMUNICATED BY

CHRISTOPHER STANGER, M.D.

**GRESHAM PROFESSOR OF PHYSIC, AND PHYSICIAN TO THE FOUNDLING
HOSPITAL.**

Read November 9, 1813.

JOHN BAYNES, aged 18 years, was admitted a patient of mine, from his Majesty's ship *Fylla*, on the 8th of last August, for inflammation of the right ear, attended with purulent discharge, but without fever. In the course of a few days the discharge ceased, merely by the use of purgatives and some topical lotions. On the 13th. he complained of acute lancinating pain, confined chiefly to the top of the head, with a hard pulse, at about 100, and other symptoms of pyrexia. He was bled to 16 ounces, and had a purgative draught.

14th. He had epistaxis during the night; the headach was relieved, but not removed; the tongue furred.

16th. The symptoms continuing, the bleeding and purgative were repeated.

17th. After shaving the head I discovered a puffy diffused swelling over the whole of the right parietal bone. He recollects having received a blow upon the same part of the head, upwards of twelve months ago, with a piece of wood, which merely stunned him, without producing further subsequent inconvenience; but thinks the discharge from the ear might be dated from that period. Bleeding repeated.

18th. A restless night with occasional delirium; white tremulous tongue; sense of chilliness; skin preternaturally hot; pulse 110; and hard tumor of the scalp not much elevated, but perfectly circumscribed and puffy, with acute pain on the slightest pressure. I made an incision through the tumor, five inches in length, down to the bone, when a very small quantity of pus issued. Several enlarged arterial branches were divided, from which between 20 and 30 ounces of blood were extracted, with the immediate effect of reducing the pulse in frequency, rendering it soft, and the patient tranquil and rational.

19th. He slept a good deal during the night; the countenance was improved, and the delirium lessened.

20th. Had a return of restlessness; the pulse was 90 and strong, and the wound in the scalp painful, with scarcely any suppuration. A purgative was given, and a blister was applied to the neck.

21st. Was seized with convulsions last night, and has at present paralysis of the left arm, and retraction of the right angle of the mouth, with, at times, mild delirium; in the evening the bowels were open, but in other respects he continued the same.

22d. Passed a restless night, but without convulsions; pulse nearly natural; a very trifling aberration of intellect; complains of headach, and the tumefaction of the scalp appears more general, retaining the impression of the fingers. The pericranium is now evidently detached on each side of the incision. I made a crucial incision across the sagittal suture, and downwards nearly as far as that of the squammous. I found the pericranium separated upwards of two inches; the bone was white, but seemingly deprived of nourishment, as no blood appeared on scraping it. The left arm was still paralytic—I applied the trephine close to the sagittal suture, and found the dura mater covered with pus, which also flowed through the suture during the operation. The discharge was so highly foetid, as to be noticed by the patient, and seemed

to be occasioned by a carious state of the diplœ, which was somewhat black and much thickened. The operation was succeeded by a partial removal of the paralytic affection, and an alleviation of every bad symptom; in which state of amendment he continued until the 25th, when he was again attacked with fever, with full and strong pulse.—Had a bolus of jalap and calomel.

27th. A restless night with occasional delirium; acute pain extending along the whole course of the spine, from the occiput to the sacrum; a thin purulent discharge, with a very unhealthy appearance of the dura mater.

28th. Restless, with white tongue, hot skin, delirium, and torpid state of the bowels. Complains much of the pain in his back, especially on every attempt to move himself from the horizontal to the erect posture, when the pain is so acute as to make him scream out most violently: he describes it as darting from the sacrum to the back of the head. The bolus was repeated.

29th. More sensible, but restless; cannot bear the smallest elevation of the trunk. An opiate was given at bed-time, and on the following day the purgative bolus was repeated.

31st. Features shrunk; countenance lurid; lips purplish; eyes half closed and glossy; pulse small

and indistinct, with low muttering. From this state he was roused in the course of the day by stimuli; but he relapsed into it, became delirious, was affected with subsultus tendinum, and porracious vomiting; and in this way continued until the evening of the 3d of September, when he died.

Dissection.

The pericranium was detached from the whole of the superior part of the right parietal bone. During the sawing through the skull on the right side, several ounces of thin pus and bloody serum gushed out. On lifting the skull, a considerable quantity of purulent matter was found lodged between it and the dura mater; chiefly over the right hemisphere, but also extending for a short way over the left. This matter was traced downwards to the petrous portion of the right temporal bone, between the dura mater and skull, and appeared to have issued from a small circular ulceration of about two lines in diameter, in that membrane, immediately over the posterior lobe of the right hemisphere. This was confirmed by making an horizontal section of that lobe, two inches below its surface, which discovered an ulcerated cavity, one inch and an half in diameter, with indurated parietes, full of pus, and communicating with the aperture above in the dura mater. The form of this ulcer being

that of a cone, or inverted funnel, seems to shew that the ulcerative process commenced in the brain. There was another ulcer posterior to this, but it affected merely the cortical substance of the brain, and had not corroded its membranes. These were posterior to the perforation made by the trephine, through which the matter had free egress. On lifting the dura mater from the brain, there were adhesions, and a great quantity of pus between the right hemisphere and falciform process. This was accounted for by supposing it to be a part of that secreted in the ulcers before described, which instead of passing through the eroded part of the dura mater, had pervaded the easier course between that membrane and the pia mater. The ventricles were enlarged and filled with serum, which, from the appearance of these cavities; and of the plexus choroides, had not been long deposited there. The communication between the lateral ventricles, under the fornix, was large and distinct. There was pus lodged on the right side of the tentorium cerebelli; and the dura mater on the right temporal bone was detached, thickened and diseased. The cerebellum was sound, but imbedded in thick pus, some ounces of which lay upon the dura mater, investing it, and consequently immediately in contact with its under surface. The adhesions of the dura mater to the foramen magnum were natural and firm; but the pus seemed to descend between that membrane and the medulla oblongata, which had lymph adhering to it,

as had every part of the membrane described to have been in contact with pus: namely, the whole space outside the dura mater down to and over the pars petrosa of the temporal bone: and that which was inside the dura mater from the ulcers downward, along the right side of the falx to the tentorium, and extending on the inside of the dura mater, as far as the foramen magnum. It, was a thick layer, not separable by simple ablution, but easily rubbed off with the fingers.

I now sawed out a piece from the bodies of the three lowermost lumbar vertebræ, when, as I had anticipated, a quantity of pus flowed out from between the medulla spinalis and its membranous investment; and still more copiously on raising the upper part of the trunk. Here the inside of the tunic also evinced the appearance of adhering lymph. There was no vestige of fracture in the skull, but the diploë of part of the right parietal bone was darker coloured than natural, and was somewhat thickened, as if undergoing incipient caries. The tables were sound.

Remarks.

What appear to me as peculiarities in this case are; the supervention of disease at so unusually late a period as twelve months after the infliction of a blow, which at the time seemed to have occasioned very little inconvenience; the symptoms

of inflammation commencing immediately after the cessation of the discharge from the ear, and the ulceration of the brain so quickly succeeding to this change; but most particularly, the intolerable pain occasioned by the insinuation of the matter between the medulla oblongata and its investing membranes, down to the very extremity of the spine; a symptom, which, as far as I recollect, has not been hitherto noticed, and which in this case has been clearly manifested by the dissection. The pus between the cerebellum and dura mater was in considerable quantity, and after having found its way thither, obtained an easy passage onward; for I cannot suppose it was secreted there.

The pathology of this case is more interesting than any practical inductions that may be drawn from it; because I believe its cure was beyond the art of surgery. On this point, however, I would beg to speak with great diffidence. Having copied the case from the notes taken at the bedside, and endeavoured simply to delineate the appearances as they presented themselves on dissection, I am desirous of leaving all comments and deductions to my more experienced brethren.

Royal Naval Hospital, Sept. 20, 1813.

A
PRACTICAL ESSAY
ON
HEMERALOPIA, OR NIGHT-BLINDNESS,
COMMONLY CALLED
NYCTALOPIA;

AS IT AFFECTS SEAMEN AND OTHERS, IN THE EAST AND WEST INDIES,
CHINA, THE MEDITERRANEAN, AND ALL TROPICAL CLIMATES; IN
WHICH A SUCCESSFUL METHOD OF CURING THE DISEASE IS DE-
TAILED.

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COMMUNICATED BY
DR. ROGET.

Read December 7, 1812.

UTILITY is the principal motive that has influenced me in intruding on the notice of the Society the practical essay which I now introduce to it, and which I trust will be found to point out a simple and effectual means of curing a complaint which is so common among seamen in hot climates, and which has generally baffled the endeavours of medical men to remove it.

The history of idiopathic night-blindness has been transmitted to us by very antient writers, and the antient and modern treatment of it has been hitherto left to nature, or principally confided to the employment of different preparations of the livers of animals.

It is presumed that the history and treatment of scorbutic hemeralopia are in a great measure new, or at all events, more copious and satisfactory than has heretofore been the case.—Mr. Telford, in Sir Gilbert Blane's *Treatise on Diseases of Seamen*, notices nyctalopia, "as a symptom of scurvy," and treated it with success in a few instances, by blisters behind the ears and other remedies, but professes that he does not understand the nature of the complaint. As far as the circle of my reading extends, and the necessarily limited library of a navy surgeon has permitted me to investigate, I have not found it described as a distinct species.

The general means of arresting the progress of scurvy, as connected with hemeralopia, will be but briefly noticed, as it is presumed that they are generally known. I would however observe, that although there are many remedies recommended for checking its progress at sea, the most extensive experience has impressed the fullest conviction on my mind, that there is no certain prophylactic for preventing, or remedy for curing scurvy, except a combined diet of fresh animal and vegetable food.

The definition given by Vogel of hemeralopia, or night-blindness is, 'visus noctu abolitus.' chap. 6. gen. 244.

Of this genus I shall venture to distinguish two species; and trust, that the history of the disease will vindicate the propriety of the division.

Species I. Idiopathica.

Hemeralopia sine causâ manifestâ.

—— II. Symptomatica.

Hemeralopia scorbutica.

After Vogel's very plain definition of the disease, which is the subject of this essay, it might be thought superfluous to notice the nosological differences, which have existed at all periods respecting its proper generic name; were it not necessary to be aware that the generic titles of nyctalopia and caligo tenebrarum have been also assigned to it by different writers who have described it.

Hemeralopia, or night-blindness, has been noticed by Paulus Ægineta, Ætius, Galen and other commentators on Hippocrates, by Bontius's translator, in Sir Gilbert Blane's Treatise on the Diseases of Seamen, by Mr. Forbes * and other Sur-

* Observations on Tropical Nyctalopia, by Mr. J. Forbes, Surgeon, Royal Navy, Edinburgh Medical and Surgical Journal, No. 28. Page 417. & seq.

geons of the Royal Navy, under the nosological title of nyctalopia, while others, with Dr. Cullen, have termed it dysopia tenebrarum.

Hippocrates (if his text is correct) and others have confined the term nyctalopia to that disease in which the patient is blind by day and can see clearly by night.

Waving the discussion of the propriety of the adoption I have made, if we view the word hemeralopia as derived from *ἡμέρα*, *dies*, and *οπτω*, *video*, to see by day, and nyctalopia from *νύξ*, *nox*, and *οπτω*, *video*, to see by night, which I believe to be the common opinion; the propriety of Vogel's choice is at once evident; but it may be objected to the correctness of this derivation, that the "al" in both words denotes *α* (alpha privativa) in which case the sense of the above translations would be wholly reversed.

Hippocrates's definition of nyctalopia, denotes the very opposite of night-blindness; *Οἱ δὲ τῆς νυκτὸς ὁρῶντες* *, *οἷς δὲ νυκτάλωπας καλεῶμεν*; Quos

* *Οἱ δὲ τῆς νυκτὸς ὁρῶντες*] *Νυκταλωπες* dicuntur præcipuo significato, qui nocturna cæcitudine laborant, & noctu nihil cernunt, sole occiduo obscurius, ut scribunt Paulus & Ætius. Galenus quoque, in obscurarum vocum explicatione, idem testatur apud Hippocratem intelligi, his verbis, *νυκτάλωπες οἱ τῆς νυκτὸς ἄλαοι*. Quibusdam etiam dicuntur *νυκτάλωπες*, qui noctu quidem melius

nyctalopus stercorarius, qui noctu cernunt. Lib. ii. sectio ii. The note on this passage of Hippocrates, adduces various authorities for believing that those only are properly termed "nyctalopes," who are affected with night-blindness, and in books the 4th and 6th, section 7th, the word *νυκταλωπες*, is every where rendered into Latin, by "nocturnæ cæcitudines," or those who are blind by night. Fæsius' edition.

Celsus describes night-blindness under the head of "De imbecillitate oculorum.—Præter hæc, imbecillitas oculorum est, ex quâ, quidam interdiu satis, noctu nihil cernunt," lib. vi. cap. vi. This description is clearly applicable to night-blindness.

Linnaeus defines *nyctalopia* to be, "Oculi visus nocturnus," the sight possessed by night, class xi. ordo vii. 907. and Vogel, "Visus noctu saltem contingens," the sight only possessed by night, class vi. 243. Agreeably to the definitions of these nosologists, the name *nyctalopia* cannot

cernunt, interdiu verò deterius, et si luna luceat, nihil cernunt: quod tamen rarum est, ut testatur Ætius, illud vero frequens & maxime usitatum, &c. p. 110. Fæsius' edition of Hippocrates, Franc. 1621.

[Τοῖσι δὲ νυκταλωπῶσι] Hic *νυκταλωπες*; vitii et affectionis oculorum nomen est, quæ noctu nihil cernunt, nocturnam cæcitudinem dicunt, cum præcipuo significato *νυκταλωπες*; dicantur eo affecta et nocturnâ cæcitudine laborantes. Note in lib. vi. sect. vii. p. 1195. From these notes it appears that the commentators have assumed it as a fact, that Hippocrates has, in these passages of his works, intended to treat of night, instead of day, blindness.

be applied to the disease of night-blindness with the slightest propriety or attention to correctness.

Sauvages, Sagar, and Cullen, do not notice any diseases under the generic titles of hemeralopia and nyctalopia. This omission is singular, as hemeralopia has sometimes terminated in total blindness, and is consequently of undoubted importance. Nyctalopia I have never met with, and I believe it to be a disease of very rare occurrence indeed.

The *Dysopia Tenebrarum* of Dr. Cullen, "*in quâ non nisi in obscurâ luce objecta videntur*," in which objects are only visible in an obscure light, is a species of dysopia, whose definition will not justify its application to the disease of blindness by night. Cullen's Nosology.

The *dysopia tenebrarum* of Dr. Cullen is synonymous to the *amblyopia crepuscularis* of Sauvages, and differs from the *amblyopia* of Linnæus and Vogel. *Amblyopia crepuscularis*, perhaps, properly signifies dullness or dimness of sight by twilight. Some French authors have termed night-blindness, *Gutta serena nocturna*. Dupont.

Vogel is the only nosologist, whose work I possess, that has inserted *Hemeralopia* among his genera, and it should be understood that this disease is the same as has been described by so many authors and medical men under the generic names of

nyctalopia and dysopia tenebrarum ; and without pretending to decide upon, much less to reconcile the differences of so many venerable authorities, I beg to observe, that I have adopted Vogel's term because his definition very accurately describes the character of the disease, and because I approve of his choice.

The abolition of eyesight by night has occurred in all ages, and is a common disease of seamen in the East and West Indies, Mediterranean, and in all hot and tropical countries and latitudes, and affects more or less the natives likewise of those regions of the globe: it also occurs frequently among soldiers in the East and West Indies; but I have been informed, that it is by no means so prevalent with them, as with sailors. It is not an uncommon complaint of the Lascars, employed in the East India Company's ships, trading between India and Europe, during their voyages. It has very rarely indeed affected the officers of His Majesty's, or of the East India Company's ships. Celsus has remarked, that women and virgins, whose menstrual returns are regular, are exempt from this disease, "*quod in fœminam bene respondentibus menstruis non cadit.*" Lib. vi. cap. vi.* and it may be observed, that the inhabitants of cold latitudes are less subject to hemeralopia in their own

* Hippocrates makes the same observation on nyctalopia: *At neque mulieres neque virgines, quibus menses apparent, hoc morbo tentantur.* Lib. ii. sect. ii.

climate than the natives of tropical countries are in theirs; but more so when they visit the tropics.

The distinguishing symptoms of hemeralopia are a partial or total deprivation of the sight from the time of the setting of the sun to its rise on the following morning, while the sight is distinctly preserved in the day-time.

The disease always affects both eyes at the same time.

In general the nocturnal blindness is at first partial, the patient is enabled to see objects a short time after sunset, and perhaps will be able to see a little by clear moonlight. At this period of the complaint he is capable of seeing distinctly by bright candle-light. The nocturnal sight, however, becomes daily more impaired and imperfect, and after a few days the patient is unable to discriminate the largest objects after sunset or by moonlight; he gropes his way like a blind man, stumbles against any person or thing placed in his footsteps, and finally after a longer lapse of time, he cannot perceive any object distinctly, by the brightest candle-light.

If the patient is permitted to remain in this state of disease, the sight will become weak by day-light, the rays of the sun will be too powerful to be endured, whether they are direct or reflected;

lippitude is sometimes induced; myopism or shortness of sight succeeds, and in progress of time, vision becomes so impaired and imperfect, that apprehensions of a total loss of sight are entertained; and this dreadful consequence has been known to ensue, where the complaint has been wholly neglected, or left to nature, or where ineffectual remedies have been employed. Bontius, p. 73.

It has been remarked by some, that the patients are capable of seeing distinctly, at all periods of the complaint, with the aid of a strong artificial light; but, in *bad* cases of hemeralopia, in my practice, the patients positively denied the existence of the sense of distinct sight, by very clear candlelight.

If the progress of the disease be not interrupted, or if the attempts to shorten its duration have been unsuccessful, or a spontaneous cure is trusted to, it will continue from a short period to six or twelve months, or even longer, until it terminates in total blindness: “et sponte evadunt, partim quidem quadragesimo die, partim verò septimo mense, quibusdam etiam toto anno perseverat.” Hippocrates, lib. ii. sect. ii. Its more general period of duration is from two weeks to three or six months, when spontaneously cured; but it can always be cut short, or promptly cured by proper remedies. In the West Indies, Mr. Forbes says, its duration

varied from one night to nine months; its general period of continuance being from one to three months. Its disappearance was followed by epiphora in two cases. Edinburgh Journal, for October 1811, page 417 & *seq.* Mr. Forbes, however, "never attempted the cure, or saw it scientifically treated."

It could not be perceived, that any particular constitutions or ages, or eyes of any particular description, form or colour, were peculiarly subject to hemeralopia, for it attacked, indiscriminately, people with eyes of every species of form and colour, and men of various temperaments, constitutions and ages: hence it is inferred, that idiosyncrasy had no effect in inducing it. Mr. Forbes observes, "that the four cases he met with agreed in one local peculiarity, viz. in having an iris of a very light colour; either a light grey or a light blue;" but further experience would have convinced him, that this peculiarity is by no means uniform or general; for the iris of six of the twelve cases which are hereafter mentioned, was neither of a light blue nor of a light grey, but was dark. If Hippocrates, by *nyctalopia*, really meant night-blindness, as his commentators have assumed, it appears, that his observations led him to conclude that black eyes were most subject to it. "*Atque in totum niger ut plurimum oculus erat.*" Lib. vii. sectio vii. There does not appear, then, any good reason for concluding, that a particular colour of

the iris bestows a peculiar susceptibility to be affected with night-blindness; as little reason is there for believing, that the size and form of the eye confers a peculiar susceptibility*.

In general, the constitutional health does not suffer in idiopathic cases, except that the patient sometimes becomes irritable and apprehensive. The appearance of the eyes does not always indicate a state of disease, nor is it often perceptibly altered from its appearance in health, unless the disease, from long duration, be advanced to the worst stage I have described. In this case the pupil is often contracted, and the eyes and actions of the patient evince marks of painful irritation, if the eyes are exposed to a vivid light, or if he looks upwards; but if they meet the direct rays of the sun, which in the tropics are always powerful, or a strong glaring reflection of them, pain and temporary blindness are induced, from which the patient recovers, by closing his eyelids, for a time, to exclude the rays of light, and by retiring to the shade. The pupil of the eye is considerably dilated, both by day and night, in the proportion of about one case in twelve, and at night the pupil is often dilated and does not perform its expansions and contractions, when exposed to the moon, or artificial light. The cases attended with dilated pupil were

* *Magnos verò, potius quam parvos oculos habebant. Hippocrates, lib. vi. sect. vii.*

generally those of long duration, and a more numerous proportion of such cases would undoubtedly have occurred, had the disease been suffered to protract its progress to a long period, and had not its course been interrupted by the prompt employment of successful remedies.

Europeans, who have been once affected with hemeralopia, in tropical climates, are particularly liable to a recurrence of this disease, as long as they remain in them. Mr. Forbes's paper states this to be the case, in the West Indies, and many sustained repeated attacks in the East Indies and China seas. Persons subject to hemeralopia, are also occasionally affected with dimness of sight, for some minutes, or short periods of some nights; and to momentary night-blindness, without its becoming a permanent disease.

The remote causes of idiopathic hemeralopia are not well ascertained, and it is difficult to comprehend the mode of operation of those which have been suggested; thus Bontius, (page 72, 73.) imputes it to "eating hot rice," in which idea the popular opinion in the East Indies agrees with him; and this author informs us, that the Dutch sailors in their East India settlements "are prohibited from partaking of that general article of diet, under a certain penalty." Sleeping with the face exposed to the brilliancy of day-light, the vivid reflection of the sun's rays from the

sandy shores of hot countries, and bright moonlight have been enumerated as causes. Dr. Pye thinks the disorder an intermittent one, and attempts to reconcile the differences that have existed in the descriptions and remarks on nyctalopia and hemeralopia, by supposing them to be the same disease, occurring at different periods, (Medical Observations and Enquiries). Hemeralopia is certainly a periodical disease, inasmuch as it returns every day after sunset, but there is no feature in its history or character, that has induced me to be of opinion, that its period of return is influenced by the same causes as intermittent fever.

I shall venture to conjecture, that too much light suddenly transmitted to the retina, or for a long period acting on it, may afterwards render it unsusceptible of being stimulated to action, by the weaker or smaller quantities of light transmitted to it by night; and hence, the proximate cause may consist in a state of insensibility of the retina to the stimulus of small quantities of light; or the retina may be in some degree paralytic or indisposed to action, from having been previously too strongly stimulated. The explanation here offered, is not free from obvious objections, although it is a certain fact, that the disease prevails most in those regions, where the sun is most powerful, and the light most vivid; that it affects Europeans not accustomed to the bright sunshine of the tro-

pics, more frequently than the natives ; that the disposition to relapses is never removed, until the European returns to his native climate, and is released from the influence and operation of the remote cause ; and that it is cured by stimuli applied directly to the eye, or to the integuments and parts in its vicinity.

Scorbutic hemeralopia is induced by the same remote causes, as scurvy in general,—hemeralopia should therefore be assigned to this species, when the subject of it has for a long period subsisted on a salted diet at sea, and with still more certainty and accuracy, if any other scorbutic symptom be present, such as spongy gums, ecchymoses, saline smell of the secretions, ulcers with liver like fungus, and an endless variety of scorbutic affections.

Experiments and observations have proved, that the blood, and all its secretions undergo considerable and important changes during the existence of scurvy ; and it would appear, that the humours of the eye suffer some changes in common with many, or all of the fluids and secretions of the body, the effect of which change may be to render them less transparent ; and an opacity of the humours of the eye in any degree thus induced, would be ill adapted to the transmission of weak streams or pencils of light. At all events, one fact strongly supports the idea of a morbid change of the humours of the eye ; for it is certain, that hemeralopia

has existed in numerous instances with other scorbutic affections, and as the scurvy has been progressively cured by a proper diet, and the healthy secretions re-established, the nocturnal sight has been gradually restored. Yet, this effect is by no means universal; and no cause, that carries conviction with it, can be assigned, why the eyes of one scorbutic patient should be afflicted with this malady, and so many escape, whose scorbutic diathesis is stronger, and whose symptoms are perhaps more severe, unless it is referrible to idiosyncrasy of constitution.

A deficiency in the transparency of the humours of the eye, induced by morbid secretion, might be considered a competent proximate cause of scorbutic hemeralopia, yet it is not possible to obtain positive proofs of such a circumstance existing in ordinary cases, as the humours cannot be obtained for examination and subjected to experiment.

Ætius, among other causes, attributes this disease, to a turbid or opaque state of the humours or coats of the eye. "*Accedit autem hoc vitium, propter aliquam capitis imbecillitatem, maximeque visui spiritus crassitudinem, et reliquorum oculi humorum ac tunicarum.*"—Ætius, caput de Hemeralopia.

Of more than one hundred cases of idiopathic,

and two hundred of symptomatic hemeralopia, that have occurred in my practice, in different parts of the globe, (but chiefly in the East Indies) all have perfectly recovered, and hence it is inferred, that under proper treatment the prognosis may be always favourable, and the patient may be at once assured of the restoration of his sight.

The method of treatment, which I have adopted, is exceedingly simple, and certainly originated in reflecting and reasoning on the probable causes of the complaint already briefly stated.

A succession of blisters to the temples, of the size of a crown, or a half-crown piece, applied tolerably close to the external canthus of the eye, has succeeded in every case of idiopathic hemeralopia which I have seen. Under their application, the retina appeared to regain its irritability and sensibility to impressions from light, in the same gradual manner as it was deprived of it.

The first application of blisters commonly enables the patient to see dimly by candle-light, or perceive objects without the power of discriminating what they are: in some slight cases that admitted of easy cure, the first application has succeeded perfectly. The second application of blisters commonly enables the patient to see by candle-light distinctly, perhaps by bright moonlight, and even

half an hour after sunset, or the sight is restored for short periods during the night, and is again abolished: the second application very often effects a perfect recovery. The third, fourth or fifth applications, in succession, generally produce a complete recovery, where the first or second have failed; but some few rare instances of very obstinate hemeralopia have required even ten successive blisters to each temple; or, instead of using them in succession, a perpetual vesicatory has been formed on each temple, and maintained, until a cure has been accomplished, an event which has generally followed in a fortnight.

This simple remedy has never failed in my practice, even in cases of long duration; nor have I often found any auxiliary local one necessary. In some cases, however, shades have been directed to be worn before the eyes, both during the treatment, and some time after the cure, with a view of shielding them from the painful irritation, occasioned by exposure to the solar rays or vivid lights. Patients, too, have been often recommended to bathe their eyes with cold water two or three times a day.

I have known electricity employed as a topical stimulus to the eye, with success, on board the hospital ship at Prince of Wales's Island, and in the practice of others in India, but no occasion offered for its use with me.

A spontaneous cure has sometimes succeeded to the eruption of boils on the face or head, and to the formation of abscesses of the face, head or ears. "*Hos juvant quidam supervenientes abscessus, et ad infernas partes tendentes.*" Hippocrates, liber ii. sect. ii. The boils and abscesses in the vicinity of the eyes may be supposed to have acted in a manner similar to the vesicatories.

Although the local remedies may be in general confided in, to ensure a successful issue, yet it is sometimes necessary to pay attention to the constitution at large; for, on investigation, it will be sometimes discovered, that the patient is affected with increased secretion of bile, or temporary indigestion; the former indicated by a yellow state of the tongue and skin, headach and pain about the præcordia, and the latter by a white tongue, loss of appetite, pain and flatulence of the stomach; in either case, cathartics should be employed, such as neutral salts and calomel, and repeated, until the symptoms are removed. Indeed, a cathartic has been frequently prescribed on the first day, when no constitutional symptoms have been present.

If the symptomatic hemeralopia is attended with any of the ordinary symptoms of scurvy or scorbutic affections, it should be inferred, that a scorbutic diathesis occasions it, and hence it is the most rational and prudent practice to defer (or suspend if they have been previously used) the ap-

plication of the blisters, until the scorbutic disposition is corrected, by proper diet and medicines; not only, because well founded apprehensions ought to be entertained, of a scorbutic ulcer forming on the blistered parts, but, because (as has been already stated) the nocturnal sight is often gradually restored, as the cure of scurvy progressively advances.

Should the scorbutic hemeralopia not yield to the usual treatment of scurvy, it must be classed with the idiopathic disease, after the scorbutic symptoms have receded, and recourse must be had to blisters, and the same mode of treatment, as has been already recommended for its cure.

In the scorbutic hemeralopia, no absolute necessity exists for delaying the application of blisters beyond the period that a proper diet is obtained, when vesicatories can be safely applied, without an apprehension of inducing a scorbutic ulcer.

During the existence of scorbutic hemeralopia, when at sea, the exhibition of lemon and lime-juice, and the other remedies adapted to the general cure of scurvy, should be adopted, although a cure may not be accomplished or expected, until a diet of fresh animal and vegetable food is procured.

I have estimated, that about one-third of the

cases of scorbutic hemeralopia resists the efficacy of the antiscorbutic regimen and remedies, and consequently require to be treated ultimately, as idiopathic cases.

In the scorbutic cases of hemeralopia, after a diet of fresh animal and vegetable food has been instituted and persevered in for a short time, and the scorbutic diathesis is corrected, if a lax state of the bowels is not induced by the change of diet, as is usually the case, I have frequently directed cathartics, with a view of exciting the absorbents to convey away, and change the humours of the eye with celerity, that a healthy secretion may be re-established.

I have never administered cathartics in either species of hemeralopia, without, at the same time, employing vesicatories, except in very few instances in early practice, and these did not offer any satisfactory evidence of a successful result from their exhibition; yet, in several cases, the blisters and a cathartic have so promptly brought about a recovery, that I have been induced to ascribe much of the benefit obtained to their use.

From the long and tolerated duration of many of those cases originally induced by scurvy, arising from the necessity of deferring the use of the most effectual remedy, their cure has been sometimes proportionally protracted, but has, nevertheless,

been always accomplished, by perseverance in the repetition of blisters.

It should be observed, that hemeralopia is sometimes, nay, often cured by the spontaneous efforts of nature, when no remedy has been adopted, or any practical attempt at recovery made, as in Mr. Forbes's practice above quoted. This spontaneous cure is sometimes effected suddenly, but more commonly in a gradual manner: but, as the duration of all cases left to nature, is unlimited and uncertain; as their mode of termination is doubtful; as loss of sight sometimes ensues; as it is impossible to establish a diagnosis, by which, the cases that admit of a spontaneous cure, can be distinguished from those that will not; and as no injury can be induced by the remedies recommended for their cure, I think the practice should be adopted in all cases, in preference to leaving the disease to the spontaneous efforts of nature.

From the cure being often spontaneous, some fanciful and whimsical remedies experimentally employed at the period of recovery, have occasionally obtained the credit of success, and are recommended with all the sanction of venerable authority, when the cure has been really effected by a healthy process of nature. I never noticed any evident and uniform good effect, from any remedy, except *time*, until the use of the blisters was adopted; and when their efficacy was ascertained,

the disease was never left to nature, or useless experiment.

In the case of John Whitlow, marine, of near twelve months' duration, which occurred soon after my arrival in India, and which particularly excited my interest, and engaged my attention, three months elapsed in trusting the process of cure to nature; and six months were employed in trying the effects of collyria, sternutatories, masticatories, purgatives, emetics, bark and tonics, calomel, so as to induce ptyalism, and other remedies recommended, but no benefit resulted. He was at last cured by blisters, twelve times repeated, and was the first subjected to the treatment. The *disposition* to a recurrence of disease in this case was so strong, during the five years he remained in the East Indies, that it was not completely removed till three months after the patient's arrival in England. When it did recur, its cure was effected with comparative facility, by the prompt re-application of the blisters, and never after required so many repetitions of blisters as at first. Shortly after the fortunate result was obtained in Whitlow's case, one of three months', and another of five months' duration were effectually cured by the same remedy, in a much shorter time.

The frequent recurrence of this disease during the patient's continuance in a tropical or hot climate, naturally suggests the propriety of recom-

mending those subject to it to return to their native climate, which generally has the effect of completely removing the disposition to relapse.

Notwithstanding the efficacy of the treatment I have recommended, was so well known by the seamen of his Majesty's ship *Belliqueux*, that they often applied for blisters, as a matter of course, without consulting me; and other surgeons in India, at my suggestion, adopted it with equal success; yet, as it possibly may not always succeed, I shall notice some remedies that are recommended by authors, and leave the reader to estimate their comparative value.

The liver of different animals has been selected as the sovereign remedy in this disease; and professional men have availed themselves of its use, in every variety of form and modification that ingenuity could well have devised. Thus, Celsus has directed the eyes to be anointed with the blood of the liver of animals, but gives a particular preference to that of the he-goat:—The same liver ought to be eaten.—“*Sed sic laborantes inungi oportet sanguine jecinoris (maxime hircini, sin minus caprini) ubi id assum coquitur, excepto: atque edi quoque ipsum jecur debet.*” Lib. vi. Caput vi.

In the Mediterranean and Italy, fumigations of bullocks', goats' and sheep's livers, boiled, fried or

roasted, have been conveyed to the eyes by proper apparatus; their livers have been prescribed for diet; cataplasms, formed of slices of that viscus, have been applied over the eyelids at night, and the eyes have been anointed with the oil or fat obtained from it. The same practice has obtained in the West Indies.

A strong testimony in favour of fumigations of bullock's liver, is given by Monsieur Dupont, in a "Mémoire sur la goutte sereine nocturne epidémique ou nyctalopie," wherein he states, that two hundred and fifty soldiers were easily cured of it in the following manner:—In a new glazed earthen pot, boil half a pound of bullock's liver, in four pints of water, until it is cooked enough for eating: when the steam arising from it is sufficiently cool, place the head close to the pot, surround it with a covering, and retain it there, with the eyes open, to receive the steam, until it no longer arises. One application in this manner is said to effect a permanent cure.

Bontius bestows his testimony in favour of a fish's liver: he, indeed, recommends "sternutatories, masticatories, purging and bleeding: but the *grand specific* in this disorder, and a medicine of which I have often experienced the virtues, is the liver of the fish *Lamia*, eaten crude with salt. The Dutch name of this fish is 'Een Haye,' and when exposed to the sun, there distils from it an

oiliness, named in the same language ‘Traen,’ which anointed upon the eye is an immediate remedy. The livers of other fish are injurious.”—(Translation of Bontius by a Physician, pages 72, 73.)

The fish here described, which in the Malayan language is called “Lamia,” and in the Dutch “Een Haye,” is the shark, the liver of which is to be eaten crude; and the oil which possesses such “immediate” virtues of restoration of sight, is the ~~rain~~ ^{liver}-oil from the shark*. Bontius was often successful, but acknowledges he also was not, even with the *specific*. The root of wild valerian is recommended in a note by the translator.

In the West Indies, citric acid has been injected between the eyelids; and sailors have expected great advantages from washing their eyes with human urine†! “One man washed his eyes with his own urine, and the blindness did not recur on the night following this first lavation, nor afterwards.”—Mr. Forbes on Tropical Nyctalopia, already quoted.

* The liver of the large white shark yields about one gallon of oil.—GOLDSMITH.

† Sailors are credulous and superstitious enough to attribute extraordinary effects to human urine: thus, I have known a boatswain of a man of war persuade sailors, affected with gleans and gonorrhœa, to take copious potations of their own urine, until the stomach and general health have been much deranged by the practice.

Celsus enumerates other remedies besides the unguent of the blood of the he-goat's liver: "Licet etiam tamen iisdem medicamentis non inutiliter uti, quæ vel cicatrices vel asperitudinem extenuant. Quidam, contrito semine portulacæ, mel adiiciunt, eatenus, ne id ex specillo distillet, eoque inungunt. Exercitationibus, balneo, frictionibus, gargarizationibus, iisdem, his quoque utendum." Lib. vi. cap. vi. de Imbecillitate Oculorum.

Is the train-oil of the shark, that proves so "immediate a remedy," the application alluded to by Mr. Jackson in his account of Morocco? Or is it, the unguent of liver-blood, or of honey and powdered purslain seed, mentioned by Celsus, that "cures the disease by one application?" Mr. Jackson's Account of Morocco, 2d edition.

I must candidly confess, that my credulity is staggered, and my scepticism excited, when I read of "specifics and immediate cures" of night-blindness, by one application of any remedy. If Bon-tius found, that "eating the crude liver of the shark was a specific," or that "anointing the patient's eyes with its train-oil was an immediate remedy," whence arose the necessity of employing "stermutatories, masticatories, purging, and bleeding?" If one application of the patient's own urine is effectual, or if the preparations of the blood and livers of animals is an adequate remedy, it is difficult to see why collyria, unguents,

exercise, frictions, and gargles, are to be enumerated as useful auxiliaries, as Celsus has done.

I am rather disposed to believe, that those remedies have been employed at the period that nature has performed a spontaneous cure ; yet it is impossible thus to dispose of the testimony of Monsieur Dupont adduced in favour of fumigations of bullock's liver, for the effect was produced in too many instances, although it is worthy of remark, that he does not state how soon the recovery took place, after the fumigation was used. I never derived the beneficial advantages from the use of the liver of animals, which I was induced to expect, from the authoritative and venerable recommendations, with which they have been invested.

It may be permitted me to observe, that in the treatment of all diseases, whose nature is understood, or in which the practice is uniformly adequate to the cure, the happy result is generally procured by a few simple remedies, while those diseases, that have resisted the tests of experiment, or have baffled the suggestions of ingenious reasoning and theory, have been assailed at different periods, by remedies of various qualities, opposite nature, and doubtful effects, as has been the case with night-blindness ; but when the successful remedy is at length discovered, it generally proves uniform and certain in its effects, simple in its nature and operation, and safe and easy in its appli-

cation : hence, when numerous remedies are recommended for any particular disease, the mind vacillates, and is perplexed in its choice of remedies, and we become persuaded, that it has never been treated with uniform success. Such is the case with epilepsy, tetanus, &c.

Of twelve cases of hemeralopia, selected for observation at one period of the year 1808, as they casually stood on the list, it was noted, that seven had grey eyes, one dark grey, one black, three hazle, and one hazle-brown ; their hair shewed different shades and colour, from the light and carrotty hair of Bonnel Stewart, and Alexander Mitchell, to the black hair of Bartholomew Germaine, an Italian. Their ages varied from twenty to thirty-eight. In eleven cases, the iris contracted and expanded regularly in the day-time, as in health ; in one, the pupil was much dilated. The tunica conjunctiva was clear, and the lucid cornea was brilliant in all. Blindness was induced in all, shortly after sunset, and the sight restored after broad day-light. Eleven could see tolerably, and one could see distinctly and clearly, by strong candle-light. Nine were affected with scorbutic symptoms, and two afterwards became affected with scurvy. Bonnel Stewart, marine, observed, that on bright sun-shiny days, blindness was sooner induced in the evening. Robert Kerr recovered his sight one night, but lost it the next. Alexander Mitchell could see a little for a few nights, but

total nocturnal blindness recurred. It may be here remarked, that some patients, about the period of recovery, alternately lost and recovered their sight by night, or during different periods of the same night. Nine of the twelve recovered their sight perfectly, as soon as the scorbutic symptoms yielded; the other three were cured by blisters to the temples.

Since my arrival in England from India, in August, 1811, the observations of Professor Scarpa on the Diseases of the Eyes, translated by Mr. James Briggs, have been perused by me. Professor Scarpa succeeded in curing four cases of hemeralopia, as it appears in Europe.

“ The first was the case of a boy, 14 years of age, who, for several weeks, had used fumigations of boiled sheep’s liver, without advantage. The second was that of a waterman, and the third of a husbandman of our neighbouring rice fields. These last were between 30 and 40 years old, each meagre, with a yellowish tumid countenance. The boy, after having vomited copiously by means of a grain and an half of tartarized antimony, dissolved in four ounces of water, and taken in small quantities, in the space of two hours, made use of the opening powders * during the following days;

* The opening powders “ are composed of one ounce of the crystals of tartar (*potassæ supertartras*) and one grain of the tartarized antimony, divided into six equal parts, of which the

which occasioned some nausea, and two, or sometimes three, copious motions every day. On the 5th day, at night, he began to distinguish surrounding objects, by the very weak light of a lantern. The vapour of the caustic volatile alkali was used constantly from the first day after the emetic; and on the 16th day he was perfectly cured. The waterman was treated on the same plan, and vomited a large quantity of yellowish viscid matter. The vapour was applied every four hours, but he did not begin to see and distinguish objects at night by the weak light of a candle until the 11th day." "The husbandman only vomited once in large quantity, but was afterwards greatly nauseated by the opening powders for nine successive days, and had every day a copious evacuation from the bowels of greenish matter; he used also the vapour of caustic volatile alkali, as a local application, and on the 14th day, at night, began to see by the light of a candle, and continued to acquire a greater power of seeing objects at night, until he was perfectly well. Towards the end of the treatment, I ordered this patient to take the cinchona with valerian root."

"But the most speedy recovery that I have known, was in the spring of the present year, in the case of Mauro Bonini, of Donelasco, of 22

patient should take one in the morning, another four hours afterwards, and the third in the evening, during eight or ten successive days."

years of age. In the month of March he began to discover, that at sun-set he could only distinguish objects very imperfectly. This indisposition increased to such a degree, that in the beginning of May, he became, towards night, almost blind. On the 10th of May he came to this hospital. On examining him in the day-time, I found the pupil of both his eyes unusually dilated, and almost immoveable ; and towards night I made the experiment, and satisfied myself that he was blind. The patient complained of a bitter taste, heaviness of the head, and his tongue was furred. On the 11th of May, I prescribed an emetic, which did not produce all the effect that I expected ; on the following day, therefore, I gave him one more powerful, composed of ziss of ipecacuanha, and two grains of tartarized antimony. This caused him to vomit a large quantity of yellowish green matter ; the patient immediately afterwards found his head relieved, and the bitter taste removed ; the pupil of both eyes was a little contracted, and appeared to be in a slight degree sensible to the impression of a vivid light. He began to use the vapour of the caustic volatile alkali externally. On the evening of the same day, the patient's sight appeared to be improved. On the 13th, no remedy was employed, except the vapour. On the 14th, the patient complained again of a bitter taste, and his tongue appeared furred. I ordered him to take the opening powders every three hours, which produced nausea, and repeated evacuations from

the bowels. The use of the vapour was continued. Towards the evening, the patient distinguished very well all the objects which were presented to him. On the 16th, the symptoms of indigestion entirely disappeared, and the pupil of both eyes was contracted, as in a state of health. On the 17th, the patient left the hospital, perfectly cured." Scarpa, on Hemeralopia, page 500 & seq.

I do not coincide in the opinion of Professor Scarpa, that nocturnal blindness is "most frequently sympathetic of disorder of the stomach," page 499; although I admit, that there is reason for attributing three of his cases to a sympathy of this nature. Bonini's "bitter taste, furred tongue, heaviness of the head, and vomiting of yellowish green matter" (in my opinion) clearly denoted an increased secretion of bile, and deranged functions of the stomach. The yellowish viscid matter vomited by the waterman, and his yellowish countenance, as well as the daily green stools of the husbandman, are clear evidences, though not unequivocal proofs of deranged biliary secretion, previous to the use of the tartrate of antimony. There is not however any symptom detailed in the boy's case, indicative of disordered digestive organs.

I should have treated three of the cases, but more especially Bonini's, with smart cathartics of neutral salts and calomel (instead of the mild opening powders), and vesicatories to the temples,

in a manner precisely similar to those cases, which I have stated to be accompanied with constitutional symptoms, characteristic of deranged biliary secretion and disordered digestion; and I am disposed to think, that they would have been more speedily cured; for it is probable that the vapour of caustic volatile alkali acts upon the same principle as vesicatories, but perhaps with less active powers, and experience has convinced me, that increased secretion of bile is treated more successfully by purgatives than emetics.

I should have been enabled, perhaps, to establish the similitude, if not identity of those cases, with three of Professor Scarpa's, in the treatment of which I have recommended attention to be paid to the constitutional symptoms, had I not, in my practice, always combined the use of the local with the constitutional remedies: but the invincible application of blisters in all those cases, where cathartics were exhibited to remove disorder of the digestive organs, prevented me from ascertaining it with proper accuracy.

Professor Scarpa's cases (those noticed by him at page 513), and several that occurred in my own practice, render it probable, that there is a variety of symptomatic hemeralopia, depending on derangement of the liver and digestive organs. I do not perceive, that European varies from tropical hemeralopia, in its symptoms or history; and as

far as one case justifies the inference, I think it may be treated very successfully in the same manner.

Charles Frederick, seaman of his Majesty's ship *Warrior*, in the *Flushing* fleet, applied to me on the 11th of September, 1812, on account of nocturnal blindness. For some nights, he had become blind after sun-set, but the sight was restored after sun-rise in the morning. He had not any other complaint, but is of a full habit. He was ordered a saline purgative draught, with three grains of calomel, and a blister was applied to each temple. On the 14th, the blisters had healed, and the patient could distinguish objects distinctly at intervals during the night, and indistinctly at other periods. The blisters were repeated. On the 15th, the patient could distinguish objects at all periods of the night, when he awoke, and made the experiment. On the 18th, the blisters had healed, he continued well, and was desired to keep his night watch as usual. On February 8th, 1813, the nocturnal sight continued perfect, but since his cure, he has observed, that on two or three nights, the sight was dim for a short period, as if a veil or cloud was before the eyes. Frederick was subject to hemeralopia, in India, but of three hundred of my old shipmates now in the *Warrior*, this is the only instance of its recurrence in Europe, although many of them had repeated attacks of it, in the East.

Might not vesicatories, applied to the temples, be of more utility in the imperfect amaurosis, than “blisters to the neck,” or even “the vapour of caustic volatile alkali?”

Although Professor Scarpa quotes the passage in Monsieur Dupont's *Mémoire*, on the success of fumigations of bullock's liver, yet as it failed in the boy's case, he speaks of it with doubt. “If, however,” says he, “the efficacy of this remedy is a matter of fact, we may boast of another means of curing the nocturnal blindness.” Page 503.

A CASE
OF
CARTILAGINOUS SUBSTANCES,
SUCCESSFULLY EXTRACTED
FROM THE
CAVITY OF THE KNEE JOINT;

**WHICH OCCURRED IN THE DETACHMENT HOSPITAL AT GOSPORT,
IN THE SUMMER OF 1809.**

By JOHN CLARK, M.D.

SURGEON TO THE FORCES.

COMMUNICATED BY

WM. FERGUSSON, Esq.

Read March 1, 1814.

SERJEANT Muller, aged about 30, of the King's German Legion, had been noted for his discharge from the army, in consequence of a chronic enlargement of the left knee joint, and other symptoms which will be mentioned in due course; he was sent from Hilsea, to the detachment hospital at Gosport, in the summer of 1809; there to remain until he should be finally discharged: he was however very unwilling to quit the service, as he had not been bred to any trade or profession; and at that time the Legion did not enjoy the advantage of the Chelsea pen-

sion, the French had over-run, and were in possession of his native country; thus, the poor man, with a wife and family, had every prospect of being thrown destitute on the world; from these circumstances, he was most anxious that something might be attempted for his cure, with the hope of being yet restored to his situation.

The urgency of his entreaties led me to inquire particularly into his case; and so far as could be made out from his own description, it appeared, that about two years previously, he had suffered a severe attack of acute rheumatism; most of the large joints were seized in succession, his knees were the first affected, and the left had always been the most painful. For several months past he had not experienced any continued pain, either in his knees, or other joints; nor did they bear any marks of disease, except the left knee, which was considerably enlarged and evidently contained a fluid. There did not seem to be any thickening of the ligaments, enlargement of the bones, or other disease of that joint; merely, as I have before mentioned, an increased quantity of liquid within the articulation, the fluctuation of which was distinctly to be felt. The most formidable and teasing complaint remains yet to be noticed.—He could generally begin to walk, without experiencing any other inconvenience, than a sense of weakness in the affected joint; which caused a slight lameness, but on continuing the exercise, he

would instantaneously fall to the ground, as if he had received a shot, or severe shock of electricity. The pain he experienced on these occasions must have been very considerable, for though a fine manly fellow, it generally obliged him to call aloud. He compared the pain, to a sharp instrument pushed quickly through his knee, and said it was more acute than any thing he had ever felt. These accidents occurred to him sometimes twice in the same day, or oftener. I had seen him several times so affected, when he was instantly induced to apply his hand to the spot where he felt the pain, and could not admit of the slightest motion of the leg until he had pushed back a small hard substance, which he said protruded from the cavity of the knee joint. He had experienced this upwards of a twelvemonth, and suspected there were more than one moveable substance of this kind within the articulation, as he had felt them, he thought, of various sizes, and they occasionally protruded in all different situations; but most frequently, on the inner side of the joint, over the internal condyle. As soon as I was satisfied of the nature of the case, I candidly told the danger that any attempt to remove those substances, would expose him to, and merely recommended some topical application, with a common circular roller, applied moderately tight; and afterwards, the use of the laced knee-cap. By this mode of treatment those substances protruded much less frequently. However, these palliative measures not answering

his views, he requested an operation might be performed for their removal, at whatever risk ; remarking, that in his present state, his services were lost to his Prince, and that he would willingly hazard his limb, or life, on the chance of being again restored to his situation.

The responsibility of operating in such a case, I could not think of taking solely on myself and the assistants attached to the hospital ; accordingly, I requested the opinion and advice of Doctor M'Gregor, Inspector of Hospitals, of Dr. Burnett, then of the Naval Hospital at Forton, and afterwards Physician and Inspector of the Mediterranean Fleet, I also took the opinion of several other respectable medical gentlemen in the neighbourhood ; and as they considered an operation fully warranted under the existing circumstances, I resolved to attempt the extraction of the first of those substances that should present itself. I ought to remark that the patient was in every other respect apparently of an excellent sound constitution.

Our patient was now directed to keep in bed, to observe a very low diet and to take two or three saline purges. About the fourth day after the commencement of the above treatment, he was desired to walk about, in order that the substance might present itself ; for it was only by walking that this could be accomplished. He was cautioned

to secure it then in its protruded situation, instead of reducing it as he had been formerly in the habit of doing. It is hardly necessary to state that we were several times disappointed in the opportunity of operating, as the substance two or three times escaped into the cavity of the joint, notwithstanding the patient's best endeavours to secure it. At length, however, to the best of my recollection on the fifth or sixth day from his pursuing the antiphlogistic regimen, he succeeded in detaining the substance in its protruded situation until I was sent for, and arrived. A small hard moveable tumor was distinctly felt on the inner side of the knee joint, over the internal condyle, about an inch from the lower portion of the patella, in an oblique direction downwards and backwards: with a view of securing this substance in its situation, four small compresses of lint were applied around it; two of which were secured by an assistant, the other two by the patient himself, each making gentle compression in a direction behind the protruding substance; and in this manner the patient was carried to bed, the leg being kept in its position, which was between flexion and extension. As soon as the necessary preparations were made, a second assistant took charge of the compresses held by the patient, who was now laid on his back, the leg continuing in the same position, the sole of the foot was planted on the bed; and directed to be firmly secured there by an assistant. My friend Dr. Burnett was kind enough to favour me

with his presence and advice. One of the lateral compresses was now removed, and I supplied its place with the middle finger of my left hand : the other lateral compress remained in its situation, between the small tumor and the patella. I now pulled the integuments about a quarter of an inch laterally from their natural situation, and with a sharp scalpel made a longitudinal incision about an inch in length, immediately over the substance which we wished to extract. On observing the capsular ligament exposed, I ascertained with the fore-finger of the left hand, that the body was still in the same situation ; which done, I opened the ligament over the external margin of the tumor, and there instantly sprung freely from the incision, a small roundish substance, somewhat larger than a common garden pea, of an exquisite polish, and resembling cartilage. It did not bear the least appearance of having had any attachment whatever within the articulation, and there were a few very small indentations on its surface, scarcely sufficient to admit the point of a pin : hardly a drop of fluid escaped, the integuments were instantly reduced, and compression continued until the lips of the external wound were properly adapted, and secured in contact, by several small strips of adhesive plaster ; over this, with a view more effectually to exclude the external air, lint soaked in compound tincture of benzoin was applied : the limb was still kept in the bent position, and after the application of a

circular calico roller moderately light, it was laid with the external part of the knee resting on a pillow; the bandages were kept constantly moist with Aq: Litharg: Acetati, the patient was continued on very low diet, and strict injunctions given him to move his limb as little as possible. The case went on without the least unfavourable symptom; the dressings were removed on the fourth or fifth day, when complete union seemed to have taken place; he was free from pain, and in ten days from the day of operation, he was able to walk as usual. This, however, only tended to prove good his former opinion of there being more substances of a similar nature within the cavity of the joint. A second substance of a much larger size, and of a different form, but in other respects exactly resembling the first, was extracted about twelve days afterwards, at the external side of the joint, and not quite so great a distance from the patella as the former. This cartilage when cut upon, did not start from the cavity as the first had done; on the contrary, there was some difficulty in extracting it, as it lay transversely to the incision in the ligament, which had been made longitudinally as in the former operation; however by passing a small hook round it, it was easily withdrawn. This cartilage was of the size and thickness of an ordinary bean, flat, and somewhat of a kidney form; it had a small, and very slender, fibrous-looking thread attached to its centre, a little more than an eighth of an inch in length; but it did not seem

to have any attachment within the joint, at the time of extraction, whatever it might formerly have had. During this operation a considerable quantity of fluid necessarily escaped from the joint, and by the advice of Dr. Burnett, who favoured me with his presence also on this occasion, an additional quantity of more than an ounce was permitted to run off, even after the cartilage had been removed; this fluid, though of a thinner consistence than healthy synovia, in other respects exactly resembled it. The wound was brought together, and treated in every manner as in the former operation, with exactly the same success. When our patient was again able to move about, he had the misfortune to discover a third: this made its appearance as the first had done, on the inside of the joint, but about an inch posterior to the cicatrice, or two inches from the patella in a transverse direction. There was now much diminution in the swelling of the knee; partly I suppose from the quantity of fluid taken away during the second operation; but chiefly, I suspect, from the continued application of the tight bandage. This third substance was extracted as nearly as may be, in the same manner and with the same success as the first, and resembled it very much both in magnitude and shape. Suffice it to say, that in the course of six weeks, from the removal of the first cartilage, our patient was able to walk much freer than before the operations; the knee gradually became much of the same size as

the other, he continued to enjoy perfect health, and the complete use of his limbs for some months; at the expiration of which time, he marched to rejoin his regiment.

Since the period of his leaving the detachment hospital in September, 1809, I have not heard any thing of him.

This patient was visited by several persons of much professional knowledge; during his convalescence from the last operation, he was seen by Mr. Keate, at that time Surgeon-General to the Army. It was my intention to have made this case public immediately after it occurred, but from the circumstance of my being called on foreign service, I have not till now had the opportunity.

Edinburgh,
12th Feb. 1814.

ACCOUNT

OF THE

EXTRACTION OF A LOOSE SUBSTANCE,

CONSISTING

PARTLY OF BONE AND PARTLY OF CARTILAGE,
FROM THE ELBOW-JOINT.

By JAMES MILLMAN COLEY,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON,
AND SURGEON IN BRIDGNORTH.

COMMUNICATED BY

J. ABERNETHY, Esq. F.R.S.

Read March 15, 1814.

Bridgnorth, February 15, 1814.

DECEMBER 27, 1813. — Valentine Bishen, aged 30, who resides at Worfield, near this town, about seven years ago perceived a violent pain and lameness in the right elbow-joint, occasioned by a loose substance, which appeared to slip between the opposing surfaces of the radius and of the outer condyle of the humerus. The extraneous body remained in this situation about ten or fifteen minutes, and confined the arm immoveably midway between flexion and extension; after which

it suddenly receded, and the joint became apparently perfect and capable of performing its various motions. The same circumstance having afterwards very frequently happened, particularly during the time the joint was in violent motion, he became apprehensive of being quite lame, and was almost afraid of making use of the joint. When I examined the parts, I could sometimes perceive the loose substance in the situation described, and sometimes it would recede within the joint and be no longer evident to the touch; and whether it was within the general cavity or between the two bones alluded to, very little external difference was obvious.

Having explained the nature of the disease to the patient, and the application of pressure being in this instance inadmissible, he consented to submit to the operation, which was performed in the following manner: Having pressed the extraneous substance with my finger, with the view to protrude it as much as possible, and having retracted the superincumbent skin, so that the wound externally and that in the joint might not correspond after the operation, I made an oblique incision down to the lateral ligament, to the extent of an inch. The ligament and capsule were next divided, and part of the synovia escaped. A silver director was then introduced into the cavity of the joint under the loose substance, which, by employing the instrument gently as a lever, was readily

extricated. The wound being closed was dressed with adhesive plaster and the uniting bandage; the arm, moderately bent, was put into a sling; and, lastly, rest and abstinence were enjoined.

December 30.—By an accidental violent motion of the arm during sleep last night the wound bled, and was very painful. Before that happened it had been extremely easy. The dressings being removed, I found the wound had been torn open by the accident. It was dressed as before. Pulse 84.

January 6, 1814.—On this day the wound was healed, the bandage and sling discontinued; and the patient has ever since enjoyed the easy and perfect motion of the joint, and felt neither local nor general inconvenience from the operation.

The substance extracted is flat and nearly of the size and shape of a vomit nut (*Strychnos nux vomica*, *Lin.*), and consists of bone of a brittle quality, covered with cartilage. Numerous shaggy filaments, resembling small vessels, are attached to one of its flat sides; and on the centre of both is a slight indentation, produced by the pressure of the surfaces of the joint, between which in its ordinary state it lay. Its margin is smooth all round, like a stone subjected to the attrition of contiguous surfaces in the bed of a river. The filaments probably constituted a slight union between it and

the parts to which they were opposed ; and I suspect they confined the extent of its movements.

The manner in which the disease was produced in this instance is not so satisfactory as in some others, where it had been preceded by some accidental violence ; for the patient was never sensible of any injury having been inflicted on the parts, and supposes that it must have existed from the period of his infancy.

ACCOUNT
 OF A
CHEMICAL EXAMINATION
 OF THE
URINE AND SERUM OF THE BLOOD OF A PERSON
 WHO HAD BEEN
TAKING LARGE QUANTITIES OF SODA.
 BY JOHN BOSTOCK, M.D.
 OF LIVERPOOL.

Read March 15, 1814.

A YOUNG lady, who was suffering under symptoms which threatened pulmonary consumption, was recommended to take large quantities of soda. After she had continued this plan for some months, with an unusual degree of perseverance, I had an opportunity of examining the changes which had been produced in the urine and the serum, and I propose to submit to the Society the analyses which I made of the fluids. The patient began with ʒss. of the subcarbonate of soda daily, which she progressively increased to ʒiiss. ʒij. ʒiiiss. and finally to ʒiiij. She was not, however, able to persevere in this quantity for more than a few days, in consequence of the vomiting which it excited, but she continued to take ʒiiiss. daily, for a consi-

derable length of time ; it was during this period that I made my experiments. Each ounce of the salt was dissolved in about a pint of water, and she drank two or three quarts of water during the course of the day. The urine was rendered very copious, and the appetite and strength were much improved; the medicine does not appear to have produced any other sensible effect.

Analysis of the Urine.

1. The urine of this patient was of a dull primrose colour, nearly transparent, and without any sediment ; the odour was urinous, but not strongly so ; it was decidedly alkaline ; its specific gravity was 1.016.

2. A portion of the urine had a quantity of potash added ; it became slightly opake, the odour more urinous, and after two days a small quantity of precipitate was formed.

3. Equal parts of the urine and lime-water caused the formation of a small quantity of precipitate.

4. One-twelfth of its bulk of a saturated solution of the oxymuriate of mercury produced a copious precipitate ; the precipitate, when dried, was found to be in the proportion of about 2 grs. to the ounce.

5. One-twelfth of its bulk of the saturated solution of the muriate of barytes produced a copious dense precipitate, which quickly subsided; when dried it was found to be in the proportion of about 3 grs. to the ounce.

6. The solution of the superacetate of lead produced a precipitate of about 6 grs. to the ounce.

7. The nitric and muriatic acids produced considerable effervescence, and changed the colour of the urine to a reddish brown; but no precipitate was formed.

8. The solid contents of the urine were found by evaporation to amount to about $\frac{1}{10}$ th of its weight.

9. A quantity of the urine was subjected to the boiling temperature: it became opaque, frothed very much, and a white, curdy precipitate gradually subsided from it.

10. Acetic acid, of the specific gravity of 1.007, was gradually added, until the alkali in the urine was saturated; it required for this purpose about $\frac{1}{12}$ th of the weight of the urine: this mixture did not become putrid so quickly as the natural urine.

11. The extract produced by evaporating the urine differed from the extract of healthy urine in *not assuming the granulated appearance.*

12. A portion of the urine, which was kept in a corked phial, soon began to grow muddy, and to deposit white flakes; in two days it acquired a very putrid odour. Another portion, that had been exposed to the atmosphere, had undergone less change, and that which had been boiled remained a long time without alteration.

13. The nitrate of copper was added to the three portions of urine: the corked, the uncorked, and the boiled. In all of them there was a considerable effervescence, and a copious white precipitate; the fluid from the corked phial became of a deep blue, that from the uncorked phial of a light blue, and that which had been boiled of a light verdigris colour. When the same proportion of nitrate of copper was added to healthy urine, the fluid was converted to a dull olive, and a slight brown precipitate was produced.

14. The precipitate that had been formed in the urine by boiling remained a considerable time without any change; the fluid being poured off, it was readily dissolved by potash, and copiously precipitated by sulphuric acid.

15. To a portion of the evaporated extract nitric acid and water were added; a very considerable effervescence was excited, and the whole was reduced to a white, spongy mass.

16. 100 grs. of the evaporated extract was di-

gested in alcohol; the alcohol assumed a bright orange colour, and was strongly alkaline.

17. A quantity of a whitish matter was left undissolved by the alcohol, upon which water was digested; a part of it remained undissolved, which, when dried, weighed $5\frac{1}{2}$ grs. The aqueous solution was strongly alkaline.

18. The alcoholic solution was slowly evaporated to about $\frac{1}{10}$ of its bulk, and was then cooled. It was converted into a brown substance of the consistence of a thick syrup, in which was a network of fine spicular crystals.

19. The fluid was drained from the crystals, which were thus left nearly pure, they did not deliquesce, but were very soluble in water.

20. The aqueous solution in No. 17. was slowly evaporated and then cooled; an irregular mass of crystals was left, in which were observable a number of cubes; the mass, when dried, weighed $37\frac{1}{2}$ grs. It deliquesced by exposure to the atmosphere.

21. The syrupy substance in No. 18. was strongly alkaline, and rapidly attracted water from the atmosphere.

22. A quantity of the purified urea had nitric

acid added to it; a great effervescence was produced, but no scaly crystals were formed. After some days it was converted into a brown fluid, and smelled of Prussic acid.

23. The insoluble residuum in No. 17. was readily dissolved in muriatic acid, except a few grey particles, that seemed to be an accidental impurity. The solution was copiously precipitated by pure ammonia; the fluid poured from this precipitate was not affected by carbonate of ammonia.

24. The solution in No. 19. was very slightly alkaline, a copious precipitate was produced in it by nitrate of silver; by the addition of potash ammoniacal vapour was engaged, and the sulphate of copper produced a rich blue colour in the fluid.

Remarks on the experiments.

1. These experiments prove that the urine of this patient contained a quantity of uncombined alkali, and this probably in the carbonated state. See Nos. 1. 7. and 10.

2. The alkalescence seemed to be attached to the urea, as the solutions of this substance, both in water and in alcohol, still exhibited the excess of alkali. See Nos. 16. and 17.

3. The urine contained an albuminous matter. See Nos. 4. 9. 13. and 14.

4. The urine had a strong tendency to the putrefactive fermentation and the generation of ammonia. This appears to have been *immediately* caused by the presence of the albumen, and *indirectly* by the union of the albumen with the uncombined alkali. This circumstance may be thought to show some connection between an alkaline and a putrid tendency in the animal fluids. See Nos. 12. and 13.

5. The urine contained the muriatic and phosphoric salts in about the usual quantity and proportion. See Nos. 5. and 6.

6. It also contained the phosphate of lime, although in less proportion than natural; a fact, which deserves to be noticed, as under ordinary circumstances the existence of phosphate of lime and an uncombined alkali in the same fluid is impossible. Can this depend upon the alkali attaching itself more particularly to the urea, so as still to permit the urine to dissolve the phosphate of lime? See Nos. 3. 17. and 23.

7. It contained urea, but it could not be separated from the alkali, and was not capable of being granulated, nor was it acted upon in the usual manner by nitric acid; the quantity of the urea

was probably rather less than the average. See Nos. 8. 11. 15. 16. 18. and 22.

8. The spicular crystals which formed in the purified urea were muriate of ammonia, a salt said to exist in small quantity in urine, but which, in this instance, amounted to a much greater quantity than usual. See Nos. 18. 19. and 24.

9. The composition of the urine will be nearly as follows,

ENTIRE URINE.		SOLID CONTENTS.	
Water	- - 750		
Urea united to a fixed	}	142. 5	— 57
alkali - -			
Muriate of ammonia	}		
Phosphate of Soda	}	93. 75	— 37. 5
Muriate of Soda			
Phosphate of lime	}	13. 75	— 5. 5
Albumen -			
		1000. 00	100. 0

Analysis of the Serum.

1. The fluid was of a deep lemon colour, with a shade of brown. Its specific gravity was 1.029; it was strongly alkaline, much more so than ordin-

ary ; when the alkali was supersaturated with acetous acid the colour remained unchanged.

2. The boiling temperature converted the albumen into a firm coagulum, it was quite transparent, and in appearance very like orange jelly.

3. When cut into small pieces a few drops of fluid gradually oozed out, which was less alkaline than the entire serum.

4. The serum left by evaporation $\frac{1}{3}$ of its weight of solid contents.

5. 400 grs. of the serum, diluted with an equal bulk of water, had 20 grs. of muriatic acid added, by which the alkali was slightly supersaturated. It was then exposed for some time to the boiling temperature ; a considerable quantity of gas was extricated, and continued to rise through it for some time. A pulpy mass was produced, which slowly subsided and was separated by the filter. The fluid passed through transparent, and of a light brown colour ; the pulpy mass was of a verditer green, and when dried, became converted into a transparent brittle substance of a deep grass green colour.

6. The oxymuriate of mercury converted the serum into a thick cream, without forming any solid coagulum. It was reduced by boiling to a

firm coagulum of a spongy texture, which, when dried, was friable, and of a light verditer colour.

7. The nitrate of silver added to the serum threw down a coagulum in the form of dense flakes.

8. Some of the green coagulum, formed by muriatic acid, was digested with alcohol. The alcohol acquired an olive tinge, and upon the addition of water became completely opaque.

9. The alcohol being evaporated left a grey viscid substance; this substance when gently heated on bibulous paper, communicated to it a greasy stain; by increasing the heat, it consumed, leaving a carbonaceous residuum.

10. By a heat of 150° , the substance was softened but not melted; by continuing the heat, it dried up into a brown membranous substance.

11. When the substance was rubbed with water, it was converted into a pulpy mass, and was, for a considerable time, suspended in the fluid; but it gradually subsided, and by filtration the water was rendered perfectly transparent. The fluid was not rendered alkaline.

12. The substance was readily dissolved by potash at the boiling temperature, and a saponaceous

fluid was formed ; the sulphuric and muriatic acids precipitated the substance from the potash in the form of grey flakes.

13. The muriatic acid was added to the dried green albumen in No. 5. ; it soon began to turn it black, and very much to increase its bulk, while the fluid acquired a dull reddish brown colour. After long digestion in a gentle heat, the albumen was partly broken down, and the fluid gradually acquired nearly the appearance of ink.

14. When saturated with potash, the colour was diminished by the dilution, but did not appear to be otherwise affected ; a very minute brown precipitate was produced.

15. The nitric acid softened the dried albumen, and converted the green colour into a bright yellow ; the fluid when saturated with potash became of a deep orange, a slight precipitate was thrown down and yellow crystals were produced by evaporation.

16. After the serum had remained a few days in a close phial, a creamy substance began to collect on its surface, and the whole acquired a nauseous smell. In the course of two months this creamy substance had acquired a considerable thickness, and some flakes of coagulum were also deposited at the bottom of the vessel.

17. The nitrate of copper converted the whole into a mass of soft coagulum of a light verditer colour.

18. The creamy substance was instantly dissolved by potash, and reproduced by the muriatic acid.

19. A quantity of the serum was left in an open phial for several months; it became extremely foetid, and the vessel was lined with a film of a brown colour and metallic appearance; the fluid was no longer alkaline.

20. The crassamentum belonging to this serum was much cupped, and was covered with a strong buffy coat. The colour of the clot was very dark, and it was not rendered florid by exposure to the air. The buff separated from the clot in the form of a white compact membrane.

The peculiarities of this blood were the unusual quantity of uncombined alkali; the unusual colour of the serum, especially after coagulation, and the action of the muriatic acid and the oxymuriate of mercury upon it; the existence of a substance, which has not before been observed in blood, of an adipoceros nature, and of the creamy substance which was separated from the serum when it began to putrefy, which both in its sensible and chemical properties, very much resembled pus.

Notwithstanding the alkaline nature of this blood, it was in a highly inflamed state.

After an interval of five months, when the patient was taking only a moderate quantity of the soda daily, I performed some experiments upon a second specimen of the blood. It resembled the first specimen for the most part in its external characters, except that the colour was less bright, being rather brown than yellow. Its specific gravity was 1.03, and it was less alkaline, 400 grains of the serum requiring for saturation only $3\frac{1}{2}$ grains of the muriatic acid. The crassamentum was, as before, much capped and buffed, but the buffy coat was rather less tenacious, and the clot much less black. There appeared to be rather more serosity in the coagulated albumen. The muriatic acid produced nearly the same green colour as in the former instance, but the colour produced by the oxymuriate of mercury had a bluish tinge.

CASE
OF
LACERATION
OF THE
INTERNAL COAT OF THE
STOMACH AND DUODENUM,
BY
VOMITING.

By THOMAS CHEVALIER, Esq. F.L.S.

SURGEON EXTRAORDINARY TO THE PRINCE REGENT, AND SURGEON
TO THE WESTMINSTER GENERAL DISPENSARY.

Read May 10, 1814.

— Froome, aged 14, went out on Saturday, 25th of Dec. 1813, to a Christmas feast, ate heartily and drank rather freely of gin and water; on the evening of the following day he became sick, and vomited violently. The vomiting continued, at intervals, during the whole of that night, and the following morning. He went out, however, for a short time, but felt very ill; and said to one of his companions, that his blood was boiling at his heart, and that he thought he should die; and begged he would come to his funeral, if it were so. He soon returned home, and about

2 o'clock on Monday afternoon, he became short breathed, unable to swallow, and felt great anxiety, with almost continued efforts to vomit. These symptoms increased till the following day, when my friend Mr. Lightfoot of Oxford Street saw him, and thinking his situation dangerous, desired that I might be sent for.

I visited him about noon ; his appearance was extremely affecting ; his countenance was flushed and turgid ; his breathing anxious and interrupted ; his pulse very irregular, and his extremities cold. He complained of great uneasiness at his heart, which was increased by pressure near that viscus, the action of which consisted in the successive repetition of three irregular strokes ; the first rather violent, the second feeble and the third still more so. His attempts to vomit were frequent and most distressing, and generally terminated in the discharge of white froth. When he attempted to drink, the effort to swallow was accompanied by a violent and agonizing spasm of the pharynx, which made him dash the cup from his hand. Pressure on the region of the stomach, particularly towards the right side, occasioned him a great increase of pain and an immediate recurrence of the efforts to vomit. Towards the evening he vomited in successive efforts near two pints of blood ; after this he became easier, and said he should like to eat something ; toasted bread was given him, of which he ate two pieces rather eagerly, but the

vomiting speedily returning, he threw up what he had eaten, and soon after this a quantity of something which he said was so bitter it was enough to kill him. Almost immediately after this he expired.

I opened the body the following morning. The left lung was found to adhere to the pleura very generally; in every other respect the thoracic viscera were healthy. The heart and every thing connected with it appeared entirely in a natural state. The viscera of the abdomen also appeared to be healthy externally, but in laying open the stomach and duodenum the internal coat of both appeared to be torn in various places. These lacerations were much larger in the duodenum than in the stomach; and near the pylorus they extended nearly round the circumference of the gut, and rendered this part so weak that it was quite torn off in a very slight effort to loosen this portion of the intestine for the purpose of passing a ligature round it. Two extensive lacerations were also found near the middle of this portion of the intestine. All the remainder of the intestinal tube, and also the whole of the œsophagus, and all the rest of the abdominal viscera, were perfectly free from any morbid appearance.

ON
CONTRACTIONS

AFTER
BURNS OR EXTENSIVE ULCERATIONS.

BY HENRY EARLE, Esq.
SURGEON TO THE FOUNDLING HOSPITAL.

Read May 10, 1814.

THE occurrence of contractions after large ulcerations where the subcutaneous tissue has been extensively destroyed, is so frequent a subject of regret among surgeons, and so constant a source of blame among the parents and friends of the unfortunate sufferers, that I trust no apology is necessary in offering the following observations and case.

I should have hesitated in giving publicity to an insulated fact, and should have waited until subsequent experience had confirmed the plan of treatment which I shall recommend to be adopted in these cases, but that I conceive the principle on which it is grounded to be perfectly established, though the present application of it may be in some respects new, and farther I am unwilling to withhold any suggestions which may at all interest the cause of humanity.

I have said that these contractions are a source of blame to surgeons ; in some instances, perhaps, such reproaches are merited, as much may be done to prevent them by proper and strict attention to position during the progress of the healing process: and many limbs are suffered to continue in a bent position, by which the sides of the wound are approximated, and a smaller surface left for cicatrization, even when such wounds are in the immediate vicinity of a joint. By such practice the permanent benefit is often sacrificed to remove a temporary evil. The wounds are certainly sooner healed over, but the limb may for ever after remain contracted and useless. Frequently, however, such contractions do not depend on any inattention on the part of the surgeon, but are the result of a natural process which follows cicatrization, and which has often baffled all the efforts of art to controul. This process consists in an absorption of the granulations on which the new skin has been formed ; by which the cicatrix is made to occupy a much smaller extent than the originally ulcerated surface. Perhaps it would be speaking more correctly to say that the granulations which are at first florid and extremely vascular, after having deposited the new skin, receive a smaller proportion of blood, become paler and diminished in bulk, and consequently occupy much less surface for the new skin. In many cases, such as amputation, where sufficient integuments have not been saved to cover the bones, this process is

very salutary, as it is essential to have the smallest possible extent of new skin on a surface which is to be subject to much pressure. But when it occurs in the neighbourhood of the neck or any of the joints, it often causes the most distressing contractions and deformities. The force with which this gradual process acts is truly astonishing. I have known it draw down the chin upon the sternum, and approximate the shoulders so much as to cause a partial absorption of the clavicles, and completely alter the dimensions of the thorax.

To superficial observers unacquainted with the nature and extent of the mischief, it would appear that the whole evil depended on the contracted integuments, by a simple division of which the limb would be instantly set at liberty.

So deceptive is this appearance that I have more than once known men indulge this vain hope of affording relief, until a painful and ineffectual operation has convinced them of their error. In recent cases, occurring in any of the extremities, the contraction may be confined to the integuments, by dividing which, the deformity may be for a time removed; but the same cause continuing to operate will produce the same effect, and the limb will again contract after the wound is suffered to heal up. Where the contraction has been of longer duration, the muscles acquire a new sphere of action, and afford an additional and

powerful opposition to the free exercise of the limb. Lastly, where it occurs about the trunk, even the bony fabric becomes moulded and adapted to particular forms by the powerful constriction exerted on it by this gradual but certain process : In such cases it is hardly necessary to add, that the most severe operations cannot afford a prospect of even temporary alleviation.

From having several times witnessed such operations, which are wholly inefficient to the end in view, I was induced to adopt a different mode of proceeding in the case which I shall now beg to relate.

William Rule, aged six years, was brought up from the nursery in November, 1813, to be admitted into the Foundling. I was requested to examine him on account of a contraction in his left arm. On inquiry, I found that about a twelve-month before, he had been very severely burnt, in consequence of his clothes taking fire ; his neck and back had been extensively injured, but were then perfectly healed ; his left arm and fore arm had suffered most ; particularly on the inner and fore part, and there were then several small ulcerations which had been repeatedly healed, and again broke out from the very tense state of the integuments. From the fore part of the upper arm, to within about two inches of the wrist, a firm tense cicatrix of an almost horny consistence ex-

tended, which kept the elbow immoveably bent to a right angle. Being fully aware of the inefficacy of a mere transverse incision, on mature consideration of the case, I proposed to remove the whole cicatrix, and to endeavour to approximate the integuments from the two sides of the arm, which was to be kept extended on a splint, not only during the healing of the wound, but for a considerable time after the cicatrix had formed, until, indeed, those changes, which I have above described, had been fully accomplished. By such practice I conceived that the contraction which I knew must follow so extensive a wound, would take place in a lateral direction, and not in the long axis of the limb. In a word, I hoped to be able to direct and modify that, which it was not in my power to prevent, and thus, at all events, counteract its injurious effect. Having submitted my opinion to some professional friends, which met their concurrence, on the 12th of November I performed the operation with the assistance of Mr. Lawrence, in the following manner. I made an incision on the outer side of the cicatrix, commencing about two inches above the elbow, where it was broadest and terminating within two inches of the wrist; nearly the whole of this incision was made through the sound integuments. I then made a similar cut on the inner side, and carried it down gradually, converging until it met the opposite incision. The upper part of this incision was necessarily made through the cicatrix, which

nearly enveloped the inner side of the elbow. The next step was to dissect off the firm horny cicatrix, which I detached from below upwards as high as the commencement of the incision, conceiving that this triangular flap of cicatrix might be useful in accelerating the healing of so extensive a wound. I did not remove it from its upper broad basis, thinking that it might unite in its new situation. On attempting now to extend the arm, we found considerable resistance from the forcible contraction of the flexor muscles, which had been so long accustomed to a more limited sphere of action, that they with difficulty admitted of any extension. By degrees, however, they yielded considerably, and the arm was brought nearly to a right line. When the arm was so extended, the extreme point of the cicatrix, which still remained attached to the upper arm, was deficient nearly three inches of reaching the part from whence it had been removed.

The sides of the wound were now approximated as much as possible with adhesive plaister, and the whole limb was bound down on a splint. As the operation had been rather tedious and very painful, and there was great disposition to spasm in the biceps, I gave him a large dose of opium, and directed the nurse to sit by him and hold his hand, which checked the violence of the cramps. This disposition in the muscles to contract gradually abated, and the following day I was able to extend

the arm perfectly to a right line. On removing the dressings, four days after, I found that the whole of the cicatrix which I had detached, had sloughed; in consequence, I suppose, of its being a part of new formation, and not possessing the same vital powers with an originally formed part. The slough was soon thrown off, and the wound, though extensive, wore a healthy aspect.

Nothing sinister occurred during the progress of the cure, and the whole was perfectly healed by the 20th of December. I continued to apply the splint constantly for about six weeks longer, during which time the cicatrix diminished much in a lateral direction, and in a very slight degree in the long direction, but the arm continued perfectly straight. I now permitted him to use his arm for some hours during the day, but reapplied the splint when in school and at night. By degrees he left off the use of the splint altogether during the day, but I directed it to be applied at bed-time until about a week since. I am happy to add, that nearly five months have now elapsed since the wound was healed, and his arm continues perfectly straight, and he enjoys the free and perfect use of it as much as of the other. The cicatrix has contracted laterally to about one-third the size of the wound, is quite insensible, hard and devoid of vessels, and on the whole, from its present appearance, I do not apprehend that any further alteration will take place.

I have considered this case not unworthy of attention, as it strongly illustrates the efficacy of art well directed in counteracting and even rendering subservient a powerful law in the animal economy. The view which I have been led to take of the subject is, I believe, new, and the result of the case will, perhaps, warrant my expectations that it may be beneficial both in the prevention and cure of many deformities and contractions in the extremities.

Should a similar case occur to me again, I should prefer the removal of the whole cicatrix at once, to leaving it with the probability of its sloughing,

10, Berner's Street,
May 10, 1814.

THE
HISTORY
OF A
CHILD RETAINED IN THE MOTHER

FIFTY-TWO YEARS AFTER THE USUAL PERIOD OF
UTERO-GESTATION ;

By RICHARD BROWNE CHESTON, M.D. F.R.S.

PHYSICIAN TO THE INFIRMARY AT GLOUCESTER.

COMMUNICATED BY

W. LAWRENCE, Esq. F.R.S.

Read July 19, 1814.

THOSE functions of the animal economy which have for their object the continuation of the human species, although in many parts obscure, and therefore imperfectly understood, are yet on the whole sufficiently open to our observation and comprehension, to appear as the most signal examples of the wonderful powers, which animate the living body; and, if this be admitted concerning the ordinary and natural course of the generative process, it will hold, at least, equally good of those deviations from the usual chain of phenomena, which are occasionally brought

under our notice. We may assert without fear of contradiction, that the whole range of physiology and pathology does not afford a more striking instance of the resources of nature, than the effects consequent on an interruption of the natural passage of the ovum into the uterus.

The members of this Society are well aware, that if the germ, instead of arriving in the organ, which is destined to receive and retain it until it has acquired a certain size, should pass into the abdomen, or be retained in the fallopian tube, it may still acquire the full growth, in which case it forms an extra-uterine foetus. The annals of midwifery furnish such numerous facts of this description, that I should have thought it an encroachment on the time and attention of this Society, to present them with another instance. But the history which I shall now relate, although it may in some respects be considered analogous to the extra-uterine cases, differs from them in many essential points; which indeed render it perfectly unique and unparalleled in the records of our art.

It exhibits a foetus, after arriving in the uterus from the seat of its original formation, remaining nine months, and acquiring the full size in that organ, on the point of being expelled from its cavity by the process of parturition, when it escapes in an almost incomprehensible manner, from the uterus, and becomes surrounded by a bony

covering, in which it is found at the end of fifty-two years, almost as perfect in its form, as we should have expected to find it, if it had been born at the natural period of utero-gestation.

In the month of December, 1738, Mrs. Cowles was taken in labour with her fourth child, having gone her usual time without any circumstance differing from her former pregnancies; the pains were lingering and went on for three days, but without any advances towards delivery, under the attendance of a female midwife, who had been with her on former occasions. The late Mr. Rogers, of Gloucester, an accoucheur of long established practice, and deserved eminence in his profession, was then called in, and upon examination declared that the child offered for the birth, but that he could not deliver it without instruments, as the pains were not sufficient to bring the child into the world. This kind of assistance Mrs. C. positively refused, under the idea that the child would be thereby sacrificed, and she firmly declared that if she could not be delivered without instruments, she and the child should die together.

For some days the pains seemed to return at intervals, but gradually abated, so that by the end of the week all prospect of delivery was over. Great uneasiness still continued in her belly, confining her to the room, and she suffered much mental anxiety from her situation. As the case appeared

so remarkable in many respects, Mr. Rogers was pressed for his sentiments on the probable termination of it; when he declared, that now the child would not be born, but that at some distant period, the bones of it would be found with the flesh, gone. This account I received from Mrs. Cowles's sister, who lived constantly with her, attended at her labour, and was alive at the time of her death.

In the year 1771, thirty-three years after her expected time of delivery, I was desired to meet Mrs. C. at the house of a very intelligent friend of hers, who had been fully acquainted with every circumstance of her former situation, and who then confirmed to me the foregoing relation.

At this time Mrs. C. requested, that, after her death, I would satisfy myself concerning the real nature of her case, about which so many doubts had been raised.

From herself I learned the following particulars:—

In the third year after the birth of her last child, she considered herself again pregnant, and felt in every respect as in her former pregnancies. The motions of the child were lively; she had milk in her breasts; and as her labour seemed to come on, she felt the same kind of pains as before, though in a slighter degree, and with less bearing

down, or effort for the birth. The pains of childbirth left her about the third day, and she continued in a very weak distressed state for full three months afterwards, when she gradually recovered her strength, and from that time had found but little diminution in size.

Upon inquiring particularly whether she ever afterwards menstruated, she informed me that she had had several appearances at different times, but they had not made a sufficient impression on her mind, to enable her to speak to such a circumstance with the necessary precision. She had frequently been sensible of a gentle motion within the abdomen, when she was in bed, but very seldom when she was up or walking about, never found any pressure upon her bladder, so as to excite particular inclination to make water, and that had it not been for her increased size, she had not felt any material cause for complaint. Her general health was very little affected, and to the last year of her life she employed herself busily with her family concerns.

In her 80th year she had a slight paralytic stroke. In February 1790, I was desired to visit her, as her friends were then alarmed at a change in the appearance of an ulcer on the toe, which had been of some standing, but not particularly troublesome. I found her in bed with a small fluttering pulse, cold and discoloured extre-

mities, and every sign of quick spreading mortification in the affected foot. Being desirous to ascertain the general state of the abdomen, I examined it carefully, and found a considerable emphysematous crackling within the cavity, but not the least tension ; so that a perfectly circumscribed tumor could be felt about two fingers breadth higher than the navel, but inclining to the right side. She died in a few hours.

Dissection.

The lymphatics of the affected leg and thigh, from the foot up to the groin, were more conspicuous from the inflammation they had undergone, than any I had ever before observed, the limb being entirely covered by a red network.

Upon exposing the cavity of the abdomen, a tumor immediately presented itself covered by the omentum, and small intestines, which adhered to it firmly. When these attachments were separated, it presented a complete bony surface, which yielded, upon striking it, the sound of a solid bone.

As the supposed nature of the case called for a careful examination into the state of the uterus, I searched for it in its usual situation (for the tumor would admit of being raised from the sides and brim of the pelvis on which it rested), but

could not distinguish it. Taking, therefore, the advantage of an examination per vaginam with one hand, while the other was in the pelvis, I at last met with a small firm substance, at the extremity of the vagina, lying flat at the bottom of the pelvis, but as it had not the usual plump and hardened feel of the os tincæ, I became the more anxious to take out the whole contents of the pelvis, together with the tumor, that I might not injure any part of consequence to the grand object of my research. This I effected with no small trouble, and brought it away with me for more minute examination at home. Extending my inquiries to the state of the other viscera, I found the liver of a very dusky hue, and particularly soft in its texture, but of its natural size. The gall-bladder had assumed the particular shape of a crescent, having both extremities filled with concretions of various sizes. There was likewise a quantity of thick viscid bile which filled an ounce measure. The ducts were so large, that, upon pressure, the bile as well as small calculi readily passed through the ductus communis. The kidneys were natural in size and appearance. The spleen like the liver was soft and deeply livid. The stomach and intestines were healthy.

As in the course of dissection, I found the greater arteries in a state of ossification, I took out the heart with its immediate ascending branches, and the aorta descendens, as far as the

iliacs within the abdomen, when the whole of these vessels proved more or less loaded with large deposits of earthy matter, particularly the emulgents, to their entrance into the kidneys, and the splenic artery even within the very substance of that viscus. The heart was soft and flaccid, without any other circumstance worth remarking, unless that the coronary arteries, for some length, were much hardened, but without any apparent deposit of earthy matter. The lungs, on the right side, adhered firmly and universally to the pleura; on the left, partially; but in general looked healthy.

The adhesions of the tumor rendered the natural distinctions of what I had reserved for my examination at home rather obscure; but I at last ascertained the following circumstances. The upper part of the vagina was in a natural state, but the os tinæ appeared nearly as much reduced, as at its dilation in a natural labour. Dividing, however, what was evidently the lower part of the uterus, I found its substance, though diminished in thickness, still retaining somewhat of its natural structure; its internal surface exhibited very clear remains of the plaited appearance which characterises the cervix, for about three inches, when it became contracted to an obtuse point, with an aperture which just admitted the round end of a probe to pass onwards in a straight direction. Upon laying this open, there

appeared a sulcus strongly marked with rising sides for about two inches, when they diminished gradually, till they were almost obliterated at its termination in a small round cavity just of a size to receive a full-grown pea. These circumstances are represented in plate I.

The spermatic vessels were very evident on the right side, attached to the superior part of the elongated uterus, but no trace of the ovarium could be discovered; and it was only after a very attentive search that I found a cordlike substance, about the size of a crow-quill, in its external appearance not unlike the vas deferens. Upon discovering that this was tubular, I slit it up, and found, by the elegantly plaited appearance of its internal surface, that it was undoubtedly the fallopian tube. On the left side, the fallopian tube possessing in every respect its natural course and appearance, and terminating as usual in its fimbriated extremity, was very obvious. I could not, however, satisfactorily ascertain the existence of the ovarium. The close adhesions to the neighbouring parts, and the pressure occasioned by the tumor, will sufficiently account for this circumstance.

On separating the soft parts, the bony surface was found perfectly complete, except at that point, where the cavity terminated; and here, for about the size of a sixpence, the ossification was deficient, and the aperture filled up with a steato-

matous or sebaceous matter, which readily suffered a probe to pass within the tumor, about half an inch, when it was prevented from going further by a firm resisting substance. The bony mass, now divested of every thing connected with it, very much resembled a human cranium of a middle size, but round rather than oblong, weighing with its contents, three pounds, one ounce, four drachms. See plate II. fig. 1.

Though the circumstances first mentioned were sufficient to support an opinion that a foetus might be inclosed in this bony case, yet the possibility of its being an enlarged ovarium, or some substance of a glandular nature in a state of ossification, determined me to divide it through the middle with a fine amputating saw, which would but slightly derange its contents. If it proved to contain a foetus, the divided parts might be re-adapted so as to shew their natural connections, and such means pursued as would best assist any further inquiries.

A longitudinal section was therefore carried through the middle of the bony mass, and the divided surfaces, on a superficial inspection, very much resembled the kind of tumor, frequently met with in the different viscera, and composed apparently of cartilaginous layers, whose interstices are filled up with steatomatous matter. I soon however discovered that it consisted of an

osseous cyst, containing the body of a full-grown foetus, generally speaking in a state of wonderfully perfect preservation. The course of the saw had been very favourable to the subsequent examination of the parts. It had passed obliquely through the head and trunk in a direction from before backwards, commencing on the right side of the head, continued through the right shoulder, and the same side of the chest, which cavity was just exposed; then slanting from the right hypochondrium through the middle of the pelvis. Of the extremities, the left leg only was cut through; one half of the tumor contained the greatest part of the head, with the whole of the neck, nearly the entire chest and abdomen, the left upper extremity, and the thigh and upper portion of the leg of the same side. In the other division, I had a slice of the right part of the face and chest, the whole right upper and lower part of the left leg, with the foot of the same side. The cut surface of the latter is represented in plate II. fig. 2.

From the very close manner in which the parts were compacted together, I was still at a loss how to unfold this curiosity; when I determined to unravel the portion containing the head and trunk, by removing the bony case. By thus breaking open the walls of its prison, I was enabled to raise the head from the chest, and to ascertain the rest of the body. The child as it appeared when unrolled in this way, is represented in plate 3, fig. 1.;

where, however, the left arm and thigh are not exhibited, as they were destroyed in the investigation. Neither are the parts of generation seen, as these perished in the same manner. I had originally designed to preserve the opposite half in an entire state, when I considered that a further examination of this half might disclose more completely the condition of the extremities: by this means the right arm and leg were brought into view by a careful removal of the left foot and right side of the face. See plate 3, fig. 2. The position of the child in the cyst was very similar to that which it holds in the uterus; in which the body and limbs are brought nearly into a globular form. The spine was incurvated; the head bent forwards upon the chest, and the pelvis upon the abdomen, and the limbs folded between the pelvis and head. All the parts were most forcibly compressed, and as it were closely squeezed together by the bony cyst; hence the limbs were all distorted and deformed, and the figure of every part variously affected. Towards the middle of the tumor, the body and limbs, when carefully separated, were found in the most complete state of preservation: the skin, adipous substance and muscles retained much of their natural consistence, and characteristic appearances; but parts were much less distinct on the circumference, from the strong adhesion of the bony covering to the whole surface of the mass. The cyst grew so firmly to the child, that it could only be separated by very

forcible means; by the employment of which the soft parts attached to the internal surface of the tumor were necessarily sacrificed, and they presented a very imperfect and mutilated appearance when this separation was accomplished. It seemed that the cyst had absorbed the integuments and muscles of the parts which were situated in contact with it; thus, in one of the arms, which occupied this position, I found that half of the limb, which was turned towards the centre, as full and plump as usual, while the other portion lying towards the circumference, had lost all the soft parts, down to the bone, which was in contact with the cyst, and firmly compressed by it through its whole extent. The scalp, on which there were some trifling remains of hair, had lost its firmness and consistence, so as to separate from the cranium on the slightest touch. The integuments of the face, body and limbs, still retained so much of their natural plumpness, that, by the compression, the contiguous parts were reciprocally indented.

The contents of the thorax and abdomen, as far as their exposure by the longitudinal section would enable me to judge, retained much of their natural appearance, and not the least tendency to putrefaction could be observed in any of them.

The brain was rather more firm than in its recent condition, and nearly of its natural colour. The lungs were in a compact state. The liver

was of a dark brown or umber colour, and the intestines deviated but little from their usual membranous appearance, though compressed together into an irregular mass.

Although the body of the child was in a very complete preservation, and all its component parts could be readily distinguished, yet it exhibited a very different appearance from that of a subject lately deceased. It was very firm and compact as if condensed by great pressure; hence it seemed completely deprived of its fluids, and formed therefore a contrast to the juicy state of a body recently deprived of life; of blood, either in a fluid or coagulated state, (with an exception that I shall notice directly) or of that colour, which results from this fluid being contained in the vessels of a part, there was not the slightest appearance. The muscles, instead of being of a bright red, and fleshy, were of a brown hue, and the integuments possessed a very light brown, or yellowish tint; the colour in both cases was somewhat like that produced by long immersion in spirits of wine. The bones were brown, and drier than usual; they separated very easily from the periosteum and epiphyses. Of the membranes, placenta, or navel-string, I could not discover any remains, excepting the insertion of the latter into the body of the child.

near the upper part of the cyst internally, was a coagulum of blood, apparently in as recent a state, as if it had not been extravasated from the vessel an hour before; it was full in colour and firm in its substance; but on exposure to the air it soon dried, leaving little more than a mere stain on the part.

The extraordinary circumstances of this case raised some doubts, among my professional friends, as to the original situation of the child. Some eminent men supposed it extrauterine, but a variety of circumstances destroy this idea in the present case, and convince us that the child was contained originally in the uterus, and remained in that situation the usual term of gestation: the state in which I found both the fallopian tubes, shews clearly that the foetus could not have grown in either of those organs, while the appearance of the uterus deviating so widely from its ordinary condition, proved sufficiently that that viscus had been materially implicated in the processes that occurred, and had consequently suffered great derangement in its structure. Independently of these considerations, furnished by the examination of the parts, as I now possess them, the testimony of Mr. Rogers would be sufficient to prove that the case was not extrauterine. The declaration of this gentleman, that he could deliver the child with instruments, affords the most complete conviction that it was in the cavity of the uterus, and

within his reach, at the time of his examination. We cannot therefore but conclude, that the usual action of the uterus, and the powers necessary for parturition, were by some means or other so diminished in the opinion of Mr. Rogers, that nature alone could not accomplish the birth.

In the representation of the parts when separated from the bony case, as seen in plate I. are to be discovered the remains of the internal surface of the divided cervix uteri; the same texture in the sides of the substance leading from the os internum to the tumor, and an uninterrupted continuation of the sinus or cavity, in a straight line, through which the probe passed from the os internum into the cavity of the swelling. When to this we add the situation of the appendages, at the extremity of the elongation, we can have no reason to doubt, that the whole of the substance leading from the vagina to the bony tumor, was the uterus originally containing the child, and drawn into this elongated shape by the gradual advance and protrusion of the child through its yielding fundus, till it was received and retained by an extension of the peritoneum forming a kind of hernial sac. This idea struck me on my first examination of the case, but was afterwards supported by the following observation of Dr. Baillie in his *Morbid Anatomy*: "The peritoneum, covering the womb, sometimes remains whole, and there is a large mass of black coagulated blood,

lying between it and the uterus, where the rupture has taken place. This black appearance is occasionally mistaken for mortification." P. 377.

The time in which this process was effected cannot be well ascertained; the pains were at times exquisite for weeks after parturition was checked, and months elapsed before the patient was able to move about with any degree of comfort. It is therefore reasonable to suppose, that the event took place very gradually, and perhaps it was materially assisted by the remaining power in the lower part of the uterus, as described in cases of the hour-glass contraction.

The circumstances attending a rupture of the uterus have not been uniformly the same, in all the recorded instances of that occurrence. In some the most agonizing pains have been felt in a particular part, where the rent has afterwards been found; and the instant of laceration marked by a sense of somewhat bursting within, whilst in others, the only notice of its having taken place has been the retiring of the child from its former presentation.

The very perfect condition in which the child was found, has attracted the attention of all the gentlemen to whom I have shewn it. Attempts to explain this circumstance have naturally followed, and they generally terminated in one of

three opinions. Some have supposed that the child did not die when the efforts towards parturition ceased ; but that it continued to live until the mother's death. The analogies of all cases in midwifery, which bear any resemblance to the present, oppose this supposition, which is also immediately overthrown by considering the state in which the body was found. Others have thought that the contact of living parts would keep up a kind of vitality in the foetus. They argue that the child, continuing in the same medium, and the same kind of substance it had ever been accustomed to, was very differently circumstanced from what it would have been, when forced through a rupture of the uterus into the cavity of the belly. It still was in a degree of harmony with the parts to which it had always been from its first existence habituated, and probably retained a sufficient portion of its vital principle to keep up the bond of union, and prevent its decomposition. This explanation like the former proceeds on the supposition of the child retaining some spark of life, which can, I think, hardly be reconciled to the condition in which it was found on dissection. Lastly, it has been supposed that the absence of those agents, which produce decomposition, would be sufficient to preserve the child from dissolution ; that it had not been exposed to the causes of such a change ; but was preserved, like the matter of an abscess, or the fluid of dropsy, by the exclusion of atmospheric air.

Many other curious circumstances remain to be explained, such as the reduction of the tumor; the remarkable diminution in the weight of the child, and the time at which the bony cyst was formed. These are points which perhaps can only be elucidated by observations drawn from future and similar cases.

I therefore waited till this period for the event of two instances, which appeared likely to assist in these inquiries, but I have been disappointed in them. One of the women is still living: in the other, no application could overcome the obstinate prejudices of the husband against an examination of the parts after death. But, as the circumstances which occurred during the life of this latter woman, were not a little singular, I shall here add some particulars of her case from minutes made by Mr. Newell, an eminent surgeon, at Cheltenham, with whom I paid her several visits.

Jane Hawes, a healthy well made woman, about twenty-five years of age, was the mother of two very fine children. Her labours had taken place at the proper periods, and were natural in every respect. The last child was born after a very quick labour, and the mother in each instance got well, in a short time, without the occurrence of any thing worthy of remark.

In the summer of 1795, when her youngest child was about two years old, she became again preg-

nant, and I was desired to attend her. She went her full time without the smallest inconvenience, and at the end of nine months, was seized with pain, which was supposed to be labour, and I was sent for. When I entered the room the pain appeared to me to be so acute, that I concluded her delivery would shortly take place, as had happened in the former instances.

Upon examination however, *per vaginam*, I was surprised to find no disposition to dilatation of the os tinæ. The neck of the uterus was quite obliterated, and I could plainly feel the child through its substance, but though the pain was strong, there did not appear to be any forcing power accompanying it, and it had not that peculiar striving on the part of the mother, so familiar to those who have been in the habit of attending cases of midwifery. As she had no disposition to fever, and felt no inconvenience during the remission of her pains, I contented myself with directing an anodyne medicine, and thought it most prudent to wait patiently, and observe what course the efforts of nature would take.

These pains, however, continued for nearly three days, during which time no further advances were made to delivery ; and they were, from time to time, mitigated by opium and other antispasmodic remedies, with fomentations applied to the whole region of the abdomen.

During this period, I had frequent opportunities of satisfying myself that the uterus had undergone that change which an ordinary pregnancy produces; and I could not but conclude, that at this time the child was in its cavity. In the beginning there had been a small discharge, which increased on the third day in quantity, and became coloured with blood.

On the third day, fever and symptoms of inflammation took place; and these spasmodic pains, which had at times been very violent, by degrees subsided, and were succeeded by tenderness of the belly, and pain arising evidently from a new condition of parts. These symptoms were controuled by an antiphlogistic plan, and in the course of ten days, the inflammatory symptoms began to subside, and were succeeded by considerable discharges of a very foetid and purulent matter.

In the progress of this case, during the following six months, great emaciation with hectic fever came on, and her strength was supported as well as it could be, by bark, wine, opiates, and other tonic medicines; together with as generous a diet as her stomach was capable of bearing. About this time the discharge began to diminish, and her general health improved; and in about fifteen months from the beginning it had entirely ceased, and she regained her usual flesh and strength.

During this time, her size had gradually diminished ; and she was left with an enlargement of her belly, about equal to the size of a woman six months gone with child. She resumed her usual occupation, which was that of keeping a grocer's shop, and continued perfectly well till the autumn of the year 1800, when, to my great surprise, she told me she suspected she had again become pregnant.

Upon inquiry, I found that menstruation had regularly taken place, for more than a year before this time ; and upon hearing all she had to say, I was satisfied that her conjecture concerning herself was well founded. She went on without any thing remarkable happening, till the December of that year, when she was taken regularly in labour.

Upon examination I found a round solid substance, occupying the upper part of the pelvis ; and extending from the base of the sacrum, to within less than three inches of the upper rim of the pubis.

At first I was deceived and took this substance for the head of the child ; but a more minute examination convinced me that it was a solid bony tumor, immovable, appearing to be firmly fixed to the base of the os sacrum. On passing my fingers as high as I could, between the anterior sur-

face of this tumor, and the pubis, I plainly discovered the os tincæ, in a state of dilatation ; and I could distinctly feel the foot of the child *. As her pains were not very rigorous, and her strength and spirits were unexhausted, I waited, and allowed the labour to take its usual course. It was evident however that there was not room enough to save the child, and at a proper time I proceeded to deliver her by the feet.

This proved to be a work of great difficulty, and it was impossible to succeed without diminishing the size of the head by the crotchet.

The whole of the child was brought away, and the usual discharges took place. I apprehend that some violence might have been done to this bony tumor, which was so much in the way ; for symptoms of very extensive inflammation came on, shortly after her delivery. Suppuration followed, with immense discharges of foetid matter, with hectic fever and great emaciation. She lingered on in this wretched state, till ulceration took

* At this time I was desired to see her with Dr. Briggs and Mr. Newell. The cæsarian operation was mentioned, but rejected from the too probably diseased state of neighbouring parts. It was therefore determined to quiet general irritation by opiates, and to guard against any inflammatory tendency in the uterus by cold spirituous applications over the abdomen. These means were pursued for two days with every apparent success ; and on the third Mr. Newell, finding some further advances towards the exclusion of the child, proceeded to give her every assistance.

place, which extending downwards, in the course of a few months, destroyed the vagina and rectum, and her stools, urine and discharges came, seemingly, out of one great cavity. During the progress of this wretched case, various bones of the former foetus were discharged, and after lingering in the most cruel sufferings for about ten months, the unfortunate woman died.

It is very much to be lamented, that no entreaties could prevail with her friends to allow an examination of the body. The fact of the reality of the former impregnation was sufficiently proved by the discharge of foetal bones; but dissection would doubtless have thrown much light upon this very singular case.

Explanation of the Plates.

Pl. I. A. The cervix uteri.

B. B. Contracted canal, leading from the cervix uteri to the bony tumor.

C. The right appendages of the uterus.

D. The left ditto.

E. The bony tumor.

Pl. II. fig. 1. The bony tumor separated from all the soft parts.

Pl. II. fig. 1. A. Place at which the bony case was deficient.

fig. 2. Cut surface of the tumor.

A. Section of the head.

B. ————— chest.

C. ————— abdomen.

D. ————— os innominatum.

Pl. III. fig. 1. Body of the child disengaged from the bony case.

fig. 2. Extremities of the child developed by the examination of the section, represented in *pl. II. fig. 2.*

AN
ACCOUNT
OF SOME
DISEASES OF THE TOES AND FINGERS,
WITH
OBSERVATIONS ON THEIR TREATMENT.

BY JAMES WARDROP, ESQ. F.R.S. EDINB.

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§ I. *Inflammation of the Soft Parts surrounding the
Nail of the Toes.*

THERE are many diseases on which medical men seem to have bestowed little consideration from the unimportance of the parts affected as far as regards the life of the patient, but which nevertheless sufficiently disturb the comforts and enjoyments of those who are afflicted with them, to merit investigation.

There are no diseases to which this remark may be more justly applied than to some of those of the toes ; and the subsequent observations have been made in order to give an account of some of those which have not hitherto been mentioned, and of recommending a treatment in others which

may be found more successful than the means which have usually been employed.

The first of these diseases which shall now be considered, is where inflammation and suppuration take place in the soft parts contiguous to the nail, generally denominated, "the growth of the nail into the flesh."

This affection is chiefly confined to the great toe. It frequently happens, when the foot is kept in a tight shoe, that the soft parts situated on the edge of the nail thicken, are pressed over it, and become more or less inflamed and painful. If the inflammation and thickening of the soft parts increase, the edge of the nail becomes at last completely imbedded in them, and its sharp edge, from the pressure of the body when resting on the foot, increases the inflammation and produces supuration of the contiguous soft parts. Thus the hard and sharp nail, by pressing on the surface which has become ulcerated, causes great pain and lameness, and in many cases prevents the person from walking. The ulceration generally extends round a considerable part of the nail, and a fungus arises from this surface, accompanied by excessive irritability.

All those authors who have taken notice of this affection have considered a peculiarity in the growth or in the formation of the nail as the cause

of the disease in the soft parts. The different modes of treatment therefore which have been proposed are directed to remedy this supposed deformity of the nail.

Some direct, that the edge of the nail which presses in upon the tender soft parts should be raised by placing underneath it a piece of tin-plate, and thinning the middle part of the nail by scraping it with a piece of glass; thus allowing the nail and its edge to take a turn upwards from the soft parts, and assume a new form. Others advise the edge of the nail to be cut away, so that it shall be out of the reach of the soft parts,

An accurate examination, and above all, observing attentively the progress of the disease, from its commencement, will be sufficient to prove that the nail undergoes no alteration in its shape, and that it has no further share in the production of this troublesome complaint than affording a mechanical resistance to the tender flesh, and becoming from its proximity to it a constant source of irritation.

I was led chiefly to make this remark from observing on the great toe of a gentleman, whose nail was perfectly well formed, a considerable tumefaction and tenderness of the soft parts on the edge of the nail; to relieve which he was

in the habit of cutting the nail very short, and removing that portion of the edge which had penetrated into the soft parts. From this operation, a temporary relief had always been obtained ; but when the nail began to grow again, all the former uneasiness and inconvenience returned. It being probable that in this case the tenderness and swelling of the soft parts arose from, and were kept up by the pressure which those parts constantly made on the fresh-cut edge of the nail, it occurred to me that if the nail was allowed to grow of its natural size and shape, and some means taken to reduce the swelling of the soft parts, the disease might be removed. Accordingly the nail was allowed to grow, and the swollen soft parts were slightly touched with the lunar caustic. The beneficial effects of this treatment were soon manifest. The caustic had the effect of producing an absorption of the thickened soft parts, the nail soon recovered its natural smooth edge, and the patient has never since had any uneasiness, except when from inattention he has accidentally cut the nail too short.

Soon after I had seen this case, an example of the disease in a much more advanced stage came under my observation. The soft parts on the edge of one side of the toe-nail, which was of its natural shape, were greatly swollen—suppuration had taken place where the nail was imbedded in them and a painful fungus had arisen ; so that the per-

son was unable to rest the weight of the body on the affected foot.

After one application of the caustic the irritable state of the ulcer was removed ; and in two days the fungus and swelling of the soft parts were greatly diminished ; and by a second application these completely subsided. The nail was left untouched—and in a few days the patient was enabled to walk about, and he continued afterwards perfectly well.

In a third case the good effects of this mode of treatment were strikingly illustrated. A gentleman had for several years suffered great distress from inflammation and swelling of the soft parts at the edge of the nail of the great-toe, and had during that time on many occasions for several weeks been unable to walk. He had frequently cut away all that portion of the nail which was embedded in the diseased soft parts, and which appeared to him to be the cause of his complaint ; and though from this treatment he experienced temporary relief, yet as soon as the nail began to grow again, all the former symptoms recurred. A few days after the nail had been in this manner cut away, he applied to me, and I rubbed the tender and swollen parts over with lunar caustic ; this was followed by an immediate abatement of the pain and swelling ; and by afterwards allowing the nail

to grow, he has never since experienced the least uneasiness.

Perhaps the most remarkable instance of the beneficial effects of this mode of treatment, was that of a woman, who for ten years had been extremely lame in both feet, and who during that period had, submitted to several painful operations of cutting out portions of the nail, without any permanent relief. The nails in this case were very thick and circular, so that they were deeply imbedded in the soft parts. The swelling of these, however, was completely subdued by frequent applications of the caustic; and in addition to this treatment I removed a portion in the form of a V from the middle of the nail, a practice common amongst soldiers, and which might perhaps in some degree serve to allow the external angles of the nail to yield and be raised from the swollen soft parts.

Besides these cases, I have had several opportunities of trying this practice, and it has been invariably followed by equal success.

From what has been said, it will be observed, that the chief point to be attended to in the treatment of this disease is, not to cut away any of the nail, but to reduce the swelling of the soft parts. I have generally found that one or more applica-

tions of the lunar caustic have had the effect of entirely removing the swelling of those parts. The caustic destroys the painful and irritable ulcerated surface, whilst at the same time it promotes absorption of the thickened parts. In some cases it has been thought necessary first to alleviate the accompanying inflammatory symptoms by the application of poultices, and in some instances also, the alumen ustum has been found to answer better than the caustic ; but in all the cases, these means succeeded in curing the disease.

It may here be remarked, that in order to prevent either the recurrence or the formation of a disease of this kind, care should be taken not to cut off the corner of the nails, particularly that of the great-toe, for when this is done, the shoe presses the adjacent soft parts against the sharp edge of the nail, and thus produces pain and inflammation.

ONYCHIA MALIGNA.

§ II. *Of Ulceration at the Root of the Nail.*

This disease appears to be a peculiar inflammation of the soft parts at the root of the nail, and probably those connected with the formation of that organ. It may properly be considered as a species of Onychia or Panaris, and I have there-

fore denominated it the *Onychia Maligna*, from its very malignant character.

The commencement of this disease is marked by a degree of swelling of a deep red colour of the soft parts at the root of the nail. An oozing of a thin ichor afterwards takes place at the cleft formed between the root of the nail and soft parts, and at last the soft parts begin to ulcerate. The ulcer appears on the circular edge of the soft parts at the root of the nail, it is accompanied with a good deal of swelling, and the skin, particularly that adjacent to the ulcer, has a deep purple colour.

The appearance of the ulcer is very unhealthy, the edges being thin and acute, and its surface covered with a dull yellow or brown-coloured lymph, and attended with an ichorous and very fetid discharge. The growth of the nail is interrupted, it loses its natural colour, and at some places appears to have but little connection with the soft parts.

In this state I have seen the disease continue for several years, so that the toe or finger became a deformed bulbous mass. The pain is sometimes very acute, but the disease is more commonly indolent, and accompanied with little uneasiness. This disease affects both the toes and the fingers. I have only observed it on the great toe, and

more frequently on the thumb than any of the fingers. It occurs, too, chiefly in young people, but I have also seen adults affected with it.

The treatment of this disease has generally been considered as difficult and uncertain. In many cases all local applications have been so inefficacious that the amputation of the member has been had recourse to.

The only local treatment which I have ever seen relieve this complaint, has been the evulsion of the nail, and afterwards the occasional application of escharotics to the ulcerated surface. But even this painful operation in some cases does not succeed, and will seldom be submitted to by the patient; he must therefore either continue lame, or submit to the removal of the member. Other surgeons have cut out the soft parts at the root of the nail, an operation equally severe.

A successful mode of treating this disease by avoiding any of those painful resources becomes therefore an object of importance, and as I have had an opportunity of observing very beneficial effects, from the internal exhibition of mercury in several cases, it may be proper here to mention them.

In two of these cases the great toe was affected, in other two the disease appeared in the fingers.

In all of them it had continued a considerable time, and in one of those where the finger was affected, there was often a profuse hemorrhage from the ulcer. Mercury was given in small doses at first, and gradually increased, so as in twelve or fourteen days sensibly to affect the gums.

The sores in general soon assumed a healing appearance after the system was in this state, and the bulbous swelling of the joint gradually subsided. The ulcers were dressed with wax-ointment, so that the effects of the mercury might be watched, and after the sore began to heal, a weak solution of the muriate of mercury and escharotics were occasionally used to clean the wound or keep down any fungus. The mercury was continued till the ulcers were perfectly healed, and, as is generally advisable under such circumstances, it was taken in smaller quantities for some time after the patients were apparently cured.

How far this treatment may be found successful in all cases of this disease, can only be determined after considerable experience. I am persuaded, however, that there are cases wherein it will be found an efficacious remedy.

§ III. *Of Corns.*

The great relief which *Corn-cutters* give by simply removing the thickened and hardened

cuticle must have prevented medical men from making any inquiries into the nature or particular treatment of this disease; and whilst it escaped the notice of the latter, it could not have been a desideratum of the former, that any mode of treatment should be found out which might make their operations less useful, or more seldom necessary.

If a corn be examined, it will be found to consist of an increase in the thickness of the cuticle of the affected part, which, by acquiring firmness and hardness, presses on the tender skin underneath, thus exciting pain and inflammation. The portion of diseased cuticle is thickest at the central part of the corn, and forms a conical point, which makes a corresponding concavity in the corion underneath. The inflammation sometimes terminates in suppuration, and the distress which is thus occasionally produced, exceeds what might be supposed to arise from a disease which is at its commencement so trifling.

When all the hard parts are removed, and some slight defence given to the newly exposed and tender parts by the application of adhesive plaster, great relief is obtained; but it is only temporary. A new growth of hard cuticle quickly succeeds, which renders it soon necessary to recur to the same means; and these must be employed more or less frequently during the remainder of life.

From the great analogy of corns to the common wart, a disease so successfully removed by the application of escharotics, it seemed by no means improbable that a similar practice might be efficacious in the cure of corns. Accordingly I embraced the first opportunity of putting it to the test of experience.

After removing the external layers of a corn, I rubbed the surface previously moistened, with lunar caustic. In a few days the contiguous parts lost all their tenderness, of which there had been a considerable degree, and the hardness was diminished. By a second application of the caustic the hardness disappeared, and a corn, which before required to be cut every few weeks, was by two or three subsequent applications kept from growing and exciting any uneasiness for several years.

Soon after this case occurred, the efficacy of the practice was strikingly exemplified by the application of the muriate of mercury to a corn. A patient who had several warts on the prepuce, to remove which he had tried various applications, at last came under my care, and I used, with success, the application of a saturated solution of the muriate of mercury, in spirit of wine. Being at the same time much troubled with corns, and struck with the similarity of the two diseases, he thought he might try if the solution, which was so useful in removing the warts, would be as effectual

in curing the corns. He made the experiment, and met with the success he had anticipated.

From the frequency of the disease I have had many opportunities of recommending this practice, and I believe it has been universally followed with results equally successful. It is a remedy which, under no circumstances, can do harm, and those who have this troublesome complaint can easily receive such instructions as on all occasions to apply it themselves. I have generally directed them to cut off with a sharp knife, or to tear out as much of the corn as they could do with safety; to keep the toe immersed for some time in warm water; and after drying all the skin contiguous to the disease, to rub over carefully all the surface of the corn with the caustic, or wet it with the solution of muriate of mercury, by means of a camel's hair pencil. Either of these applications two or three times repeated after each of the eschars have separated, will in most instances be found sufficient to remove the corn; and when at any future period it has a tendency to grow again, the application of the caustic may be safely renewed.

§ IV. *Of the Treatment of Chilblain.*

There are many people in this country who suffer a great deal from chilblain, though it seldom occurs in the aggravated form which it so often

assumes in more northern climates. It generally appears as an inflammation of a portion of the skin of some part of the extremities, and most frequently affects the heel and toes or outer edge of the foot. The redness is of a leaden hue, accompanied with swelling and an intolerable itchiness.

Though I am aware that stimulants are usually employed and are found useful in the treatment of this stage of *Pernio*, yet, as I have had opportunities of observing such remarkable benefit from the application of diluted tincture of cantharides, it may be worth while to mention in this place the effects and the mode of using this medicine.

One part of the common tincture of cantharides to six parts of the soap-liniment, is the form which I have found to answer, and it has seldom been found necessary to vary the proportion of the medicine. The affected part of the skin is to be well rubbed once or twice a day with this embrocation, and afterwards kept warm. One or two applications usually remove all the itchiness, and after a few days the swelling and redness completely subside. As I have used this application in such a number of cases, and as it has been found equally successful in the practice of others, I have no hesitation in recommending it as a most useful and valuable remedy.

In the *second* stage of the disease, when vesica-

tions have formed on the skin, and ulceration has taken place, the cantharides will be found a beneficial application to the inflamed skin contiguous to the ulceration: it has a powerful effect in diminishing the swelling and thickening of the parts, which so often remain after frequent attacks of this disease. There is no application so useful to the ulcer itself as the common ointment composed of the red oxide of mercury.

OBSERVATIONS

ON

SOME OF THE CAUSES WHICH DESTROY THE

FOETUS IN UTERO;

WITH THE ACCOUNT OF A CASE IN WHICH A SUCCESSFUL MODE OF TREATMENT WAS EMPLOYED IN PREVENTING THAT ACCIDENT.

By D. STEWART, M.D.

LECTURER ON MIDWIFERY.

COMMUNICATED BY

MR. WARDROP.

Read July 19, 1814.

NO fact admits of a greater number of proofs, than that the customs and manners of civilized life have the effect of deranging the functions of many of the organs, which compose the human body. Those organs whose natural functions are exerted at the longest intervals, which are not essential in continuing life, and whose sympathy is most extensive, appear to suffer in the greatest degree by the influence of civilization. In proof of this, the uterine system may be considered an example,

and of all the variety of derangements to which this system is liable, none is more prejudicial to health, and none so interesting to the feelings of the mother, as that change in its functions, which causes the death and premature expulsion of the *fœtus*.

The causes which produce abortion, though sometimes easily discovered, are yet often obscure, and those which destroy the life of the *fœtus*, whilst in the uterus, if not referrible to external violence, are generally inexplicable; any facts, therefore, which point out a successful mode of treatment in these cases, may perhaps be considered worthy of being laid before the Society.

Although no direct vascular or nervous connection has hitherto been traced between the maternal and *fœtal* systems; yet it is certain, that there are some diseases, which are communicated from the mother to the *fœtus*; and also that the *fœtus* is affected in some degree by impressions made on the mind of the mother. Besides, the uterine system and the *fœtus* are often affected by a deranged state of those organs which are placed in their more immediate vicinity; and it is in cases of this description where the treatment alluded to was found so successful, and where a similar plan of management is applicable.

A lady, when eleven years of age, was affected with the measles, after which she enjoyed a weak state of health. She began to menstruate at the age of fourteen, and continued to do so regularly, though sparingly, till her one and twentieth year. She was then married, and became pregnant; during the first five months of pregnancy she had no complaints, except such as women in a similar situation generally have; but in the sixth month, she began to suffer great distress from severe pains in both sides, and in the abdomen; accompanied with diarrhœa. These symptoms became gradually more severe, till the middle of the seventh month; they then suddenly remitted, and for nearly three weeks she felt no uneasiness except from the enlargement of the mammæ. At the end of this period, labour pains came on, and a dead fœtus was expelled, which was supposed to be about seven months old. In four following pregnancies she suffered from similar symptoms, which were each time followed by the expulsion of a dead child at the seventh month, no means being employed to relieve her.

She applied to me in her sixth pregnancy, when she supposed the fœtus to be about five months old. She then complained of obstinate constipation, of distressing headachs, accompanied with deafness and a constant ringing noise in her ears. The state of her bowels was corrected by pills of aloes

and hyosciamus, and the complaints in her head were relieved by blistering. But in the sixth month of pregnancy, the symptoms already mentioned recurred, and although her pains were considerably relieved by frequent small bleedings and opiates, yet the fœtus died, and in a fortnight after was expelled. It appeared to be fully seven months old, and had no external peculiarity of appearance, except that the cuticle round the umbilicus sloughed off. The structure of the placenta and umbilical chord were perfectly natural.

The invariable premature death of the offspring of this woman, together with the sloughing of the cuticle at the umbilicus of the fœtus, led me to suspect the existence of a venereal taint in one of the parents; and on inquiry my suspicions were farther confirmed by learning that the father had an incurable sore on one of his ancles, the appearances of which were very suspicious.

Six months subsequent to her last delivery, this lady again applied to me, as she had passed a period without menstruating. Some aloetic pills were given her, to keep the bowels regular; and in the beginning of the fourth month, when the child's motion was first perceived, she was put on a course of calomel and opium, in such a quantity as to make her mouth sore, without exciting any great degree of irritation; and she was likewise

ordered to drink a good deal of water acidulated with nitric acid. Under this treatment her health was considerably improved, she passed her nights more quietly, and found her sleep more refreshing than she had done during former pregnancies. But in the sixth month, her bowels as usual became very irritable, and she was much distressed with pain in her sides. The calomel and the acid were therefore discontinued; and notwithstanding the constant use of opium, the employment of frequent small bleedings, together with the most careful regulation of diet and exercise, she became worse than she had ever been, and before the completion of the seventh month a dead foetus was expelled, having exactly the appearances of the former. Her recovery in this instance was tedious, and her general health had suffered very severely. She was therefore removed into the country, and was put on a course of tonic medicines combined with alteratives. In a few months she returned to town with her general health much improved.

She again became pregnant; constipation was obviated as formerly by pills of aloes and hyosciamus; cold bathing was recommended, and tonics, combined with antispasmodics, were prescribed. She continued in the daily use of these means till after the seventh month, without experiencing any untoward symptoms. In hopes she would at last bring forth a living child, she carefully persisted to

follow the above plan; but towards the beginning of the eighth month, all these were blasted by a recurrence of the fatal symptoms, which in former pregnancies had preceded the death of the fœtus; and this pregnancy terminated in the expulsion of a dead child.

In the course of some months this patient became, for the ninth time, pregnant. Despairing of success by any means to enable her to bear a living child at the full period of pregnancy, I had formed the plan of inducing premature labour, provided that she, as in the last pregnancy, should feel none of those symptoms which usually preceded the child's death, till after the seventh month. But before taking such a step, I consulted Mr. Croft, who dissuaded me from it, and proposed a plan of treatment which appeared highly rational, and which he had found successful, in a considerable number of cases somewhat similar. He directed, that in addition to the use of the cold shower-bath and tonics combined with antispasmodics, as soon as symptoms of irritation of the bowels came on, two or three grains of opium should be introduced into the rectum, and that this was to be repeated as often as there was any degree of tenesmus.

The first six months of this pregnancy passed as usual, without the occurrence of any untoward

symptom; but about the middle of the seventh month, tenesmus with diarrhœa commenced.

The opiate suppositories were now employed, and the greatest relief was experienced from them. During the first two days they produced headach with nausea and giddiness, but subsequently these unpleasant effects ceased, and the patient, who in former pregnancies used at this period to be distressed with the most intolerable tenesmus and pain in the abdomen, accompanied with constant diarrhœa, and who used to be harassed with general irritability and great depression of spirits, was now free from all pain and uneasiness, slept quietly every night, and enjoyed during the day a degree of tranquillity and comfort beyond what she had ever experienced. If she at any time neglected the use of the suppository, symptoms of irritation soon recurred, but recourse to it removed them; by continuing this plan, she went on to the full period of pregnancy, and was delivered of a healthy boy.

The death of the foetus whilst in the uterus has been referred to various causes. Several authors have attempted to account for this accident, by supposing that the uteri of some women are so formed as to be incapable of continuing the process of gestation to the full period of pregnancy,

and that this takes place either in consequence of the uterus admitting but of a limited degree of distension, or in consequence of the uterine arteries not conveying a sufficient quantity of blood to support the foetal life. But these opinions are perhaps incapable of receiving any confirmation from observation, and they are likewise inconsistent with what is known concerning the physiology of the impregnated uterus.

The existence of a venereal taint in either parent, has also been known to prove fatal to the foetus, and, in these cases, putting the mother under a slight course of mercury has been found successful in preventing this accident.

That diseases of the uterus, of the placenta, or of the umbilical cord, do sometimes destroy the foetus cannot be denied; and that the foetus, when in the uterus, is liable to infections and other diseases which prove fatal is indisputable. It is also well known that a peculiarity of the mother's constitution may so far affect the process of gestation, that this process is either suspended or deranged by causes in themselves so trifling as to escape observation. But I am not aware that the death of the foetus has ever been referred to irritation of the bowels or any of the viscera contiguous to the uterus.

A state of irritation of the bowels is not unfre-

quently produced by the presence of a collection of hardened feces in the colon or rectum. In the case now related, to the state of constipation, which attended the early months of pregnancy, was naturally attributed the subsequent irritation of these viscera; and it was this state of constipation which suggested the treatment which was adopted in her sixth pregnancy. But in the two subsequent pregnancies, though constipation was carefully guarded against, yet irritation of the bowels came on, and preceded the death of the foetus.

From the frequent recurrence of this state of irritation at the same period of pregnancy, from its instantly ceasing after the death of the foetus, and before it was expelled from the uterus, and from the evident tendency of the fluids to the mamma, which took place almost immediately after this accident, it may be supposed that the irritation in this case was produced by the great increased flow of fluids which takes place in the latter months of pregnancy to the viscera of the pelvis.

In order to explain in any probable manner how irritation of the bowels should cause the death of the foetus, it will be necessary to consider some of those changes which are observed to take place throughout the system soon after impregnation.

At this period some organs of the body are excited to more vigorous action, whilst the functions

of others are considerably impaired ; and that this is a salutary effort of nature seems probable, for, where it is not observed to take place, the process of gestation is easily deranged. An irritable state of the stomach, and an inactive state of the bowels are symptoms which almost invariably attend the early months of pregnancy ; and it has been observed that abortions seldom take place, when either of these symptoms continue. But when in the early months of pregnancy, they either do not occur or disappear, abortions are very apt to take place, and it is an observation which I believe was originally made by Mr. Croft, that diarrhœa almost always precedes or accompanies abortions.

Physiologists have observed with regard to those organs whose functions are only exerted at certain intervals, that when they are called to perform vigorous action, a diminution of energy takes place in the functions of some of the other organs of the body, the system being, only as it were, capable of sustaining and supporting a certain quantity of action.

As it cannot be supposed that in the early months of pregnancy, constipation is caused by the pressure of the uterus on the rectum, this symptom must arise from a diminution of that power which enables the intestines to perform their functions, and as the impregnated uterus takes on a new and a vigorous action, it may be naturally supposed

that the portion of invigorating principle, which is subtracted from the intestines, is added to the uterus. If this process be reversed, the quantity of fluids going to the uterus will be diminished, and its functions will be impaired. If to this be added the very sensible effect which tenesmus has in producing a state of languor and debility of the whole system, it will afford at least a probable explanation of the manner in which a state of irritation of the bowels proves fatal to the foetus.

The application of opium as a local remedy to allay pain or irritation has long been recommended, but in no cases are its good effects so evident as when it is used to allay irritation, communicated from the intestines to the contiguous viscera, or from any of these viscera to the intestines. It was the relief which was experienced from the use of opium suppositories in cases of diseased prostate and irritable bladder, that first suggested to Mr. Croft their use as a remedy in cases of irritation of the uterus.

In prolapsus of the uterus, a disease which is often attended with pain and irritation, I have found opium suppositories of great service.

It ought also to be remarked that none of the good effects of opium in diseases of the uterus are ever derived from its introduction into the vagina, and seldom from its action through the medium of

the general system. In some of the cases of prolapsus of the uterus, when the opium was introduced into the vagina, it had no effect in relieving the symptoms; and I believe it is found to be the same with regard to diseased bladder. In the foregoing case although large and repeated doses of laudanum were given, which produced a very sensible effect on the general system, yet the tenesmus continued unabated; but as soon as the opium was introduced into the rectum, this symptom was almost instantly relieved, even before the general system could be perceived to be in the slightest degree affected.

It is likewise worthy of observation, that in some cases where opium, when given even in small doses, produces many disagreeable symptoms, its introduction into the rectum is not followed by such effects, more especially if it be combined with a little soap.

CASE
OF
CYNANCHE LARYNGEA,
WITH
REMARKS.

By **THOMAS WILSON, Esq.**

SURGEON, STEWARTON.

COMMUNICATED BY

DR. ROBERT WATT,

OF GLASGOW.

Read January 4, 1814.

THE following are the outlines of a remarkable case, which occurred to me lately, and which I suppose to have been an instance of Cynanche Laryngea, the disease which has been so well brought into public notice by Dr. Farre*.

On the morning of the 25th of January, 1813, I was called to visit D. S. aged 24 years; a man of a sanguine temperament, and usually very strong and healthy. A few nights preceding this he had been exposed to cold and fatigue, and on the 24th had been affected with pain in his throat, and smart

* See Medico-Chirurgical Transactions, Vol. III, p. 84.

inflammatory fever. The pain in his throat had now become more severe; he breathed with great difficulty; could not swallow any thing, though exceedingly thirsty, nor articulate, except in weak and almost inaudible whispers.

On inspecting the fauces, I was surprised at not being able to observe any thing which could account sufficiently for such distressing symptoms. There was little perceptible inflammation or swelling upon the amygdalæ. The velum pendulum palati, back part and sides of the fauces appeared to be only slightly inflamed without any very evident degree of swelling. He had no cough or pain in his breast; when desired to put his finger to the seat of the pain, he pointed to the thyroid cartilage; his tongue was foul; his pulse quick and small.

Blood was taken from his arm till he nearly fainted; he was ordered to soak a small piece of flannel in ammoniated oil, to apply it to the outside of his throat, and repeat this application every two hours. A laxative mixture was also ordered, but a strong objection occurred: he could not swallow any thing; this, however, I could scarcely believe, and therefore caused some gruel to be given him by way of trial. After many desperate attempts to swallow the gruel, I was convinced of my error, for it generally either returned through the nostrils, or, when about to be suffocated, he threw it

forcibly out of his mouth. He was ordered to inhale the steam of warm vinegar and water often, and to take the purgative if he should afterwards be able to swallow it.

Late in the evening I was informed that he had not been able to take any of the laxative mixture, and that his distress and the difficulty of his breathing were increased. I then sent a large blister to be applied exactly over the part affected, and not to be removed till it rose completely. I also ordered a clyster to be given immediately.

26th. The blister rose and discharged well ; the injection operated ; the difficulty of breathing and pain of the throat are considerably diminished ; he can now swallow at intervals, though with pain and difficulty, a small quantity of drink. The appearance of his mouth and throat is nearly as yesterday, only the inflamed membrane of the fauces is rather more shining. On pressing down the tongue and forcing it forwards with a spatula, turned over its root, I discovered the epiglottis enlarged to nearly the size of a small plum, red and glossy ; the parts around had the same appearance. As the difficulty of breathing was now no longer a mystery, so the swallowing was necessarily interrupted by the swelled and inflamed epiglottis and contiguous parts, these obstructing deglutition by their bulk, and not being able to bear the pressure in the act of deglutition. Though he was certainly

in every respect better, yet his strength was more exhausted than from the short continuance of the disease could have been expected ; he could with difficulty sit out of bed till I made the necessary examinations ; his voice was still weak and scarcely can be heard.

The clyster to be repeated, and the laxative mixture to be taken, if possible ; the loose cuticle, where the blister was applied, to be removed, and the blister to be repeated immediately, and kept on fifteen or twenty minutes in order to excite as free a discharge as possible ; to use a rose gargle often, and to swallow slowly a small quantity of it every time it is used, so that it may come in contact with the inflamed parts.

27th. He has been recovering very fast since yesterday ; the epiglottis is considerably diminished in size ; difficulty of breathing and pain of the throat nearly gone ; the blister was applied and is discharging freely ; the purgative and clyster have operated well ; the gargle has been used frequently, and he thinks it has done some good, as he can swallow with more ease after using it ; the laxative mixture and the gargle to be continued, and the blister to be repeated if necessary.

30th. He has been gradually recovering since last report, and has now little complaint, except weakness and a little difficulty in swallowing ; his

voice is still weak, though it can be heard distinctly ; he wishes to continue the gargle, as he thinks he cannot yet want it ; the laxative mixture to be used occasionally.

I saw this young man a few days ago, and he has continued well ever since, unless once or twice, being a little hoarse, and feeling a little uneasiness in swallowing ; these affections went off without any means being used. I consider his appearance, however, to be more delicate, and his voice to be weaker than formerly.

I shall now beg leave to observe, that the narrative of this case is necessarily very imperfect, having never before observed the disease, and my patient being at a considerable distance in the country, I had few opportunities for observation. With regard to this case I may remark, that the symptoms do not agree with Dr. Cullen's definition of Cynanche Pharyngea, which is as follows :—
“Cynanche cum rubore in imis præsertim faucibus, deglutitione maxime difficili, dolentissima, respiratione satis commoda, et febre synocha *.” In the present instance the pain was referred to the thyroid cartilage ; the swallowing was exceedingly difficult, painful, and at last impracticable ; the difficulty of breathing, and the suppression of the voice, were no less striking. When the tongue

* Vide Synopsis Nosologiæ Methodicæ.

was forcibly pushed forward and depressed; the swelling and inflammation of the epiglottis and parts contiguous were brought into view, and shewed most distinctly the nature of the disease; the pulse too was highly characteristic of inflammatory action. The larynx then instead of the pharynx was the chief seat of the affection. I believe the symptoms I have described correspond pretty correctly with those given by Dr. Farre, to which I must refer you, as I have not the book at present beside me to compare them.

Let the nature of the complaint be once generally known, and no extraordinary degree of discrimination will be necessary in order to detect it; it may be easily distinguished from croup by the difficult deglutition, the early suppression of the voice, the absence of cough, and the dyspnœa being permanent and increasing, but not attended with a wheezing noise; on the contrary, the deglutition in croup is free, and the voice is not suppressed, but particularly ringing and shrill; the cough is of a particular sound, resembling the barking of a little dog; the difficulty of breathing is attended with a wheezing noise, often alternates with paroxysms of suffocation. These symptoms can hardly be confounded with those of cynanche laryngea; besides, the former is perhaps a disease peculiar to children, the latter more properly belonging to adults. It may also be distinguished

from cynanche tonsillaris, by the want or comparatively little inflammation and swelling of the amygdalæ, velum and uvula. It may however be sometimes combined with this last disease, when the diagnosis will become more difficult; but even then the extremely difficult breathing, the particular seat of the pain, and the smallness and quickness of the pulse will serve to distinguish it.

In the case related the pulse was extremely quick and small; this was doubtless owing to the swelling of the epiglottis and mouth of the larynx diminishing the rima glottidis, and preventing the necessary supply of air for the purposes of respiration. Whether oxigenation or decarbonization of the blood be effected in the lungs, it is certain that some change is produced on it, necessary for maintaining the force and vigour of the circulation. When the entrance of the air into the lungs is obstructed or otherwise prevented from having its due influence on the blood, the pulse soon becomes quick and feeble. This is observable in some degree in asthma, in croup, in peripneumonia notha, in severe cases of chincough, in acute bronchitis, &c.

With regard to the treatment of this disease, I can suggest little else than what was done in the case stated; though the recovery was perhaps more owing to the powers of nature, than to the

means employed, were another case of the same kind to occur, I should think myself justified in following the same course.

The early application of means appears to be absolutely requisite for obtaining success. If blood-letting be neglected at the commencement, the pulse will in all probability soon become too feeble to admit of its use. In proportion as the swelling in the larynx increases and respiration is impeded, the blood becomes less fit for being the proper stimulus to the left side of the heart and to the arterial system. Hence bleeding at a late period might not only endanger the circulation, but be useless or even hurtful to the local affection, as a certain degree of vigour in the circulation is necessary to push forward the blood through the debilitated inflamed vessels. In this state blistering seems to be the more eligible remedy, and in fact the event of this case justifies this supposition. The blister acted decidedly in relieving the pain, the difficulty of breathing, and the obstructed deglutition. Indeed, the other means used might also be of advantage; the gargle particularly was mentioned by the patient as affording him relief. The inhalation of the steams of warm vinegar and water, and the subsequent laxatives might also contribute in some degree to the cure.

I feel a confidence in the benefit that is to be de-

rived from the use of laxatives when the state of deglutition will permit, from experience of their good effects in some other inflammatory affections of the throat and mucous membrane of the trachea and bronchiæ.

Stewarton,
16th November, 1813.

ACCOUNT
OF
A CHILD,
BORN WITHOUT A BRAIN,
WHICH LIVED FOUR DAYS;

**WITH A SKETCH OF THE PRINCIPAL DEVIATIONS FROM
THE ORDINARY FORMATION OF THE BODY; REMARKS
ON THEIR PRODUCTION; AND A VIEW OF SOME PHY-
SIOLOGICAL INFERENCES, TO WHICH THEY LEAD.**

By W^M. LAWRENCE, F.R.S.

ASSISTANT SURGEON AND DEMONSTRATOR OF ANATOMY AT ST. BARTHOLOMEW'S HOSPITAL; AND SURGEON TO THE LONDON INFIRMARY FOR DISEASES OF THE EYE.

Read June 7, 1814.

A DEFICIENCY of the brain and its coverings is not very uncommon; and it constitutes what have been called acephalous (i. e. headless) *foetuses*. The bones which form the top and sides of the skull, viz. the superior convex part of the frontal, the whole of the parietal, the squamous portions of the temporal, and the greater part of the occipital bone behind the foramen magnum, are wanting: as the brain does not exist, the bony cavity is not formed. The basis of the cranium is covered,

partly by the skin, and partly, in a greater or less extent, by membrane; which latter is united at the edge of the cranium with the common integuments, and hair grows on them in this situation, although there is none in the corresponding part, nor within some distance of it, in individuals naturally formed. As the surface of the head recedes immediately behind the eyes, they appear very prominent, and give to the whole a striking resemblance to the head of a cat; hence these fetuses have been called in Germany cats'-heads (katzenköpfe).

In some of these cases the whole brain is deficient: the medulla spinalis, and the nerves usually connected to the basis of the brain begin at the openings, by which they go out of the head, and are perfectly formed in all respects. In others a small portion of brain exists, connected to the commencement of the nerves, covered by a soft vascular membrane, and forming a dull red or brownish tumor on the basis of the skull. Some cerebrum and cerebellum were recognised in a case recorded in the 2d volume of the Transactions of this Society, art. 6.

My friend Mr. Armstrong, of Islington, was kind enough to send me an acephalous child, which was born on a Sunday, and lived till the following Thursday evening. The brain and cranium were deficient, and the basis of the latter was covered

by the common integuments, except over the foramen magnum, where there existed a soft tumor, about equal in size to the end of the thumb. The smooth membrane covering this was connected at its circumference to the skin. The child, as is generally the case in such instances, was perfectly formed in all its other parts, and had attained its full size. It moved briskly at first, but remained quiet afterwards, except when the tumor was pressed, which occasioned general convulsions. It breathed naturally, and was not observed to be deficient in warmth, until its powers declined. I regret, that from a fear of alarming the mother, no attempt was made to see whether it would take the breast; a little food was given to it by the hand. It voided urine twice in the first day, and once a day afterwards: it had three dark-coloured evacuations. The medulla spinalis was continued for about an inch above the foramen magnum, swelling out into a small bulb, which formed the soft tumor on the basis of the skull. All the nerves, from the fifth to the ninth, were connected to this. The intestines contained a moderate quantity of the usual dark-coloured substance: and there was a little fluid, of the ordinary appearance, in the gall-bladder. Soemmerring and Morgagni have observed that most of these acephalous children are females: and it has been found in many instances that the renal capsules were very small *.

* Soemmerring, *Abbildung und Beschreibung einiger Missgeburten*, &c. p. 7.

The present case exemplified both these observations.

Some time ago I had an opportunity of examining another malformed child, not indeed until it had been kept so long that several interesting points could not be ascertained. With the circumstances attending its birth I was unacquainted. It had neither brain nor spinal marrow: the whole of the spinous processes were deficient, and the place of the medulla spinalis supplied by a vascular membrane, like that which covers the basis cranii in acephalous children, united in the same way to the surrounding skin. The heart, lungs and liver were deficient; the ribs short and imperfect, lay close to each other, and did not form a thoracic cavity; the face was malformed in many respects; the fingers and toes were under the usual number: with these exceptions, the formation of the body and the size of the limbs were tolerably natural. I know no instance of want of the heart without considerable deviations from the ordinary structure in other parts of the body. In an example described by Mr. Brodie *, the fingers and toes were not perfect, nor in the right number; the palate was divided, the liver deficient, and the œsophagus ended in a cul de sac. We may state, in general, that where any principal organs are wanting, or any considerable deviation occurs in leading points, there is always great confusion in the sub-

* Philos. Transact. 1809, Part I.

ordinate parts. This is exemplified in the two following cases: the acephalous children however form an exception to this remark.

I saw, in the possession of Mr. Norman of Bath, a production consisting of the lower half of the body, from the kidneys downwards, and consequently destitute of heart and brain. The umbilical vein ended in a large venous trunk, placed between the two kidneys, and occupying the situation of the vena cava inferior, and the umbilical arteries took their usual course. There was a serous cavity containing a portion of intestine. The pelvis and its contents, and the external organs of generation, were tolerably perfect; the lower limbs ill formed, but they contained muscles, vessels, nerves, &c.

Dr. Clarke has described a case of malformation similar to the preceding, in the *Philosophical Transactions*, Vol. 83. It was expelled after the birth of a well formed and healthy child. There were two projections on it, each ending in three imperfect toes. It contained an os innominatum, femur, and tibia and fibula: and a small portion of intestine, covered by peritoneum, was found on the inside of the former bone. There was no vestige of heart, brain or nerves*.

* Analogous instances, in which the upper half of the body was deficient, and where there was consequently no brain, heart, lungs, or liver, are recorded in the *Hist. de l'Acad. des Sciences* 1720, and 1740; and in the *Philos. Transact.* 1767. It is stated
by

Should any doubt be entertained, whether the examination of these productions can lead to interesting or useful results, we may observe, that our conceptions of nature will be more correct in proportion as they are drawn from a more extensive survey of her works; and, that we cannot fail to learn something of her mode of proceeding by attending even to the imperfect sketches, which she seems to have abandoned as incapable or unworthy of being completed. The causes of these failures, and the conditions necessary to the production of perfect beings, cannot be understood without carefully noting in what the imperfections consist, and the circumstances under which they are produced. This subject too elucidates several questions in the hypotheses concerning generation. By shewing us what happens when an important organ is wanting or malformed, it contributes to fix our opinions respecting its uses. It also exemplifies the general fact of the regularity of nature's works; since we see her, even in these abortive attempts, acting according to a rule, and deviating from her accustomed mode of proceeding, not capriciously, but in a certain series and order. Neither should we overlook these productions in our attempts to infer from the phænomena of nature, and particularly from organized beings, the character of the cause which has produced them. Creatures so imperfectly constructed, as to be incapable of independ-

by Mr. Brodie, in the paper abovementioned, that two such examples were contained in Dr. Hunter's Collection.

ent vitality, and consequently perishing immediately after they are born; and those whom the malformation of some organ dooms, after a life of pain and misery, afflicting to themselves, and burthensome to others, to a premature death *, offer an apparent exception to the inferences, which have been drawn from the animal kingdom in general, concerning some attributes of the creating power †.

In the remainder of this communication, I shall give a sketch of the principal deviations from the

* I allude to the malformations of the heart in which there is a mixture of the arterial and venous blood: and to those of the urinary organs, in which the ureters open on the surface of the body.

† Haller was aware of the difficulty; but he has eluded instead of solving it. "*Monstrum malum physicum esse dicitur absque demonstratione. Infinitissima pars seminum ad maturitatem pervenit, reliqua dispereunt. Major pars infantum prius interit, quam possint animi dotes ad Dei voluntatem utiliter expedire. Nihil plus in germine alienæ fabricæ vitii est, quam in abortu.*" *Oper. Minor. tom. 3. p. 173.* Archdeacon Paley has passed over the subject in silence. It will be obvious that the remark in the text is merely an extension of the common argument (on the merits of which I pronounce no opinion) concerning the character of the creative energy, as deduced from the works of creation, to a case which is generally omitted, because the results do not agree with the conclusions which it is usually the object of such arguments to establish. It cannot in any way affect our notions of the Deity, which are derived from an infallible source: the clear and steady light of revelation precludes the necessity of recurring to the faint and uncertain glimmerings of natural theology.

usual structure of the body, that I may have an opportunity of stating my views concerning their causes, a subject on which I find nothing satisfactory in any physiological works : and I shall conclude by pointing out the inferences, to which the facts related in the beginning more particularly lead.

Notwithstanding the general similarity of parts in the same species of animals, there is considerable variation in those details of structure, which do not affect the execution of the functions, nor interfere with the general form and relations of organs. The smaller parts, and particularly the bloodvessels, differ in almost every two bodies ; so that it would be very difficult, if we descended into minutiae, to settle precisely what ought to be regarded as the most frequent, and therefore the *natural* structure. In parts, however, where one model is generally adhered to, deviations occasionally take place : these aberrations from the accustomed type, are called by anatomists *varieties*, or *lusus naturæ* : when the body in general, or some large and conspicuous part of it, deviates from the accustomed formation, which deviation is accompanied generally with imperfection in some of the functions, the creature is called a *monster*. No very accurate line can be drawn between these and varieties ; nor can we assign a rigorous meaning to the former term, which is generally used in

a loose and popular manner*. A considerable anomaly in the form or structure of a particular organ is often called by anatomists a *monstrous* formation.

In the articular ends of bones there is little variety: a particular shape is best adapted to a particular kind of motion: but in other parts, as the foramina, depressions, ridges, and sutures, deviations from the accustomed model are often observed. The same general rule will apply to the varieties of muscles: the principal object is a certain insertion near a joint, giving a determined direction to the motion produced. These insertions vary very little; but there are many differences in other points, which have no share in regulating the motion. The biceps flexor cubiti has often an additional slip from the humerus, and the latissimus dorsi from the angle of the scapula. The palmaris longus and the plantaris are often absent; but the other flexors of the wrist and extensors of the ankle supply their place.

In no part of the body, are the arrangements less confined to a particular model, than in the

* “*Monstri vox*,” says Haller, “*ex ipsa linguæ natura videtur designare aberrationem animalis a consueta suæ speciei fabrica adeo evidentem, ut etiam ignarorum oculos feriat. Notis vis vocis perinde videtur indicare fabricam, etiam grandium & conspicuarum partium, alienam a solita.*” Oper. Minor. tom: III. p. 8.

distribution of the blood-vessels. Whether the blood pass by one route or another is of no importance. The great arterial trunks of the body and limbs are not exposed to these varieties; because they generally occupy situations, in which they are most effectually protected from external injury. We may remark, also, that the arteries of the upper are much more liable to varieties than those of the lower limbs. The latter are almost constant in their distribution, while those of the forearm and hand are hardly alike in any two subjects taken together. There is no obvious principle, by which this difference can be accounted for. One or two examples have been observed, in the vena portarum, of a departure from the usual arrangement, completely deciding an important physiological question, which it had not been possible to settle by direct experiment. The trunk of this vein, instead of branching out in the liver, has terminated in the inferior vena cava. Mr. Abernethy* found this in a child about ten months old, in which the gall-bladder contained bile, and the body had been well nourished. Another instance, not yet published, was met with by a teacher of anatomy in London, in an individual several years old. As the blood, which had circulated through the digestive organs, passed immediately into the general venous system in these cases, the bile must have been secreted from the blood of the he-

* Philos. Transact. Vol. 83.

patic artery; although so many ingenious physiologists have proved, quite to their own satisfaction, that the blood acquires in its circulation through the intestines, omenta and spleen, various properties which are indispensably necessary to the formation of bile.

There is less variety in the nervous system of animals of the same species, than in most parts of the body. Scarcely any differences are observed in the appearances of the brain, and much fewer in the distribution of the nerves, than of the blood-vessels.

There is very little variety in the organs of sense: perhaps the mechanism of these, and of the brain and nerves is nicer, so that a considerable deviation from the ordinary structure would interfere with their peculiar functions.

Irregularities in the organization of the skin, are more conspicuous in the coloured, than in the white races of mankind. One of the most striking is the entire absence of colouring matter, constituting the albino, which was first noticed in the negro: this peculiar formation, however, occurs also in the white races, and in various genera, both of mammalia and birds. The colouring matter is equally deficient in the hair and eyes: hence the former is white, and the choroid coat, iris, and pupil of the latter pink.

Individuals of the black races are sometimes marked by spots of white, of various size and number, without any thing like disease of the skin. This circumstance occurs most frequently in negroes*. But such spots are not peculiar to the dark-coloured races. Blumenbach saw two instances in Germany, one of a youth, the other of a man sixty years old. They both had a rather tawny skin, marked here and there with various spots of the clearest white. They appeared first in the former in infancy, and in the latter at the age of manhood. Patches of the skin are sometimes thickly covered with hair, like that of the head; such occurrences have given occasion to reports of persons having hides like animals. Scœmmerring saw a woman said to have the skin of a deer, and shewn in many parts of Europe. He found the peculiarity to consist of numerous and large elevations of the skin, covered by thick and strong hair. They were of the nature of the moles often seen on the face of very fair persons, and generally giving origin to hair: he could not discover a single hair resembling that of a deer†.

A very singular structure of the skin exists in some individuals of an English family, called the

* Blumenbach, *Abbildungen naturhistorischer gegenstände*, 3^{te}. heft. Buffon, *supplém.* tom. 4, p. 565, tab. 62. Byrd in *Philos. Trans.* vol. XIX. p. 781. *Trans. of the Philos. Society of Philadelphia*, tom. II. p. 392.

† *Abbildung und Beschreibung einiger Missgeburten*, p. 32.

Porcupine men. It occurred in a man, and his six children, in all of whom it began about nine weeks after birth. The skin of the whole body, except the head, and face, the palms and soles, is covered by an innumerable company of warts, of a dark brown colour, and a cylindrical figure, about an inch in length at their full size, growing as close as possible to one another, but so stiff and elastic, that when the hand is drawn over them they make a rustling noise. They are shed annually in the autumn or winter months, and succeeded by young ones of a paler brown. The health of these individuals was not affected *.

The various appearances of the skin, comprehended under the name of *nævi materni*, and commonly supposed to be produced by the influence of the mother's imagination, are natural varieties in the structure of this organ.

The diverticula of the small intestine, the union of the two kidneys into one mass, and the supernumerary spleens, are examples of varieties in the viscera, which do not affect their functions: the latter depend on structure, not on form or size.

The internal organs are sometimes completely transposed: all the parts, which are commonly on the right side, being on the left, and *vice versa*.

* Philos. Trans. No. 424; and Vol. 49. p. 21. Edwards's Gleanings of Natural History, Vol. I. Blumenbach, in Voigt's Neue Magazin, Vol. III. Part 4.

A very detailed and perfect account of such an arrangement, which included all the thoracic and abdominal viscera, with their nerves and blood-vessels, and the thoracic duct, is given by Dr. Baillie, in the 78th Vol. of the Philosophical Transactions. There are several other minute and well authenticated accounts of similar transpositions.

An example is related, by Dr. Sampson, in one of the early volumes of the Royal Society's Transactions. "But that, which most of all surprised us, was the inverted order of his bowels: his liver, which was very large, lay in the left hypochondre, and his spleen in the right; the cone of his heart was on the right side, and accordingly the larger and thinner ventricle was on the left; and the thick one, which is in others on the left side, was in him on the right. The great artery descended on the right side, and the vena cava ascended by his liver on the left. The œsophagus descended to the first orifice of the stomach on the right side, which made the pylorus and entrance of the pancreas to be on the left, and the first flexure of the small guts to be towards the right: so that the beginning of the colon, with its appendicula, lay on the left os ilion, and the flexura sigmoidea towards the right. Other things, that necessarily followed this site, need not be mentioned. It was not thought on to inquire, on which side the lacteous thoracic ductus ascended, or where it ended; nor, on which side the recur-

rent nerves took their places of returning about the trunks of the great artery and the auxiliary; nor had we time to do it. This person in his lifetime was never observed to have any distemper, or usage, which might discover this inverted situation of his bowels, nor had this contra-position any evident influence upon his diseases and death. He was about thirty years of age, a married man, had several children, was of a middle stature, healthful till towards the latter end of his time: had no prominence on his left side, more than the other; was not left-handed, nor had any weakness on his left side." *Philosophical Transactions*, No. 107. Mery found all the parts of the abdomen and chest in this inverted state in a soldier, who died at the age of seventy-two; and has left a very accurate narrative of the dissection *. Another instance is recorded by † Bartholin, and by Riolan‡, in his *Disquisitio de transpositione partium naturalium et vitalium in corpore humano*; and another by F. Hoffmann, in his *Cardianastrophe, seu cordis inversio memorabilis, observata a collegio medico civitatis Hallensis, in anatomia cadaveris feminei*; Leipzig, 1671.

In the cases which have been just mentioned, the functions are still perfectly executed; the change

* Recueil des anciens mémoires de l'Acad. Tom. X. Also *Mem. de l'Acad. An. 1733*, p. 374.

† *Histor. anat. rar. Cent. 2. hist. 29.*

‡ *Opuscula Anatomica varia & nova*; Paris, 12mo, 1652.

of position in the transposed viscera, or of size and figure in the united kidneys, leaves these organs just as capable of answering their usual purposes as when the ordinary arrangement is observed. But the heart is often the seat of deviations from the accustomed structure, which essentially affect its functions, and thereby exert such an influence on circulation and respiration, as to give a very peculiar character to the whole state of the individual; and generally to shorten very considerably the term of existence. In animals which breathe, the passage of the blood through the lungs produces a remarkable change in its properties and appearances; the right performance of the various vital processes requires that the organs of the body should be supplied with blood, that has undergone this change; and this object cannot be accomplished, unless the cavities of the heart holding the two kinds of blood, are kept perfectly free from all communication with each other. In many instances the heart is so formed, that the two sides constantly communicate; this is of no consequence, so long as foetal existence continues, in which the blood is all of one kind; but afterwards it produces a mixture of the arterial and venous bloods, and the greatest disturbance of respiration and circulation. The body, particularly its extremities, is cold and livid; the slightest exercise produces anxiety, and often a suffocating sensation, accompanied with fits of insensibility; the growth is impeded, and the whole being so altered, that

the individual is unfit for any active employment, and has a truly miserable appearance. The black and red bloods will be more or less completely mixed in these cases, according to the degree of malformation, and the individual will either die very soon after birth, or exist in a state of languor, suffering, and constant prospect of death, for a few weeks, months, or even years.

The imperfect organizations of a more striking kind, most of which come under the notion commonly affixed to the term monster, may be arranged under the four divisions of 1, unnatural formation ; or 2, unusual position of certain organs ; 3, of deficiency ; or 4, redundancy of certain parts. The kinds of monstrosity are not kept distinct in each case : they may all be united in one specimen, and the want of one part is often attended with unnatural position of another, &c.

1. The hare-lip, and the frequently accompanying fissure of the palate, constitute a striking example of unnatural formation.

The urinary and generative organs in both sexes are frequently the seat of unnatural arrangements. The anterior part of the urinary bladder, and the integuments covering it may be wanting ; the posterior portion projecting between the recti abdominis muscles, and forming by its mucous lining a soft, red, sensible protuberance on the surface

of the lower part of the abdomen, contiguous at its circumference with the common skin, with the ureters opening on it; and constantly allowing the passage of the urine. The ossa pubis do not come together in these cases, but are separated by an interval of an inch or two: hence the recti muscles are unusually far apart, and allow the projection of the back of the bladder. So extensive a malformation could not exist in this part of the body without disturbing the arrangement of the generative organs, particularly in the male. The wide separation of the ossa innominata occasions an unusually long portion of the penis to be concealed under the integuments; hence the loose portion of the organ is very short. It deviates again very widely from its ordinary appearance in consequence of not being perforated by an urethra: or perhaps we may say that the urethra, like the urinary bladder, is laid open. The scrotum is divided into two lateral folds, each containing its testis. In the female, the labia are wide apart, instead of being joined by the usual commissures, the nymphæ deficient, &c *. It has been observed much more frequently in the male, than in the fe-

* A male subject of this kind was examined by Dr. Baillie, and is described by him in the Transactions of a Society for the improvement of medical and surgical knowledge, Vol. I. Mr. A. Cooper has described the external appearance, and the dissection of a female in the Edinb. Med. and Surg. Journal, Vol. I. Dr. Duncan, Jun. has made an extensive collection of all the recorded cases in the same Vol. of the Edinb. Journal.

male subject. Many of the individuals have exhibited themselves for money, and have often been supposed to be hermaphrodites; a supposition which they have encouraged for the purpose of increasing public curiosity*.

These cases prove to us clearly, what we should have supposed *à priori*, viz. that the urinary bladder is not a part essential to the body, but subservient only to our convenience and comfort, by retaining the urine, and preventing its constant discharge. A person may exist in perfect health and strength, although the urine should run off as it is secreted.

Other examples of unnatural formation are seen in spina bifida, in the imperforate rectum, oesophagus, urethra, &c.; in various imperfections of the extremities, and in the union of the two eyes into one, placed in the middle of the forehead, in the situation of the nose, which is deficient. This is not an uncommon kind of monstrosity, and seems to realize the ancient fables of the Cyclops. The single eye is large, and has the appearance of two confounded together. Thus each lid is composed of two, united in the middle by their extre-

* I have considered this subject, as well as all those unusual formations of the sexual organs, which have given rise to a notion of the mixture of the two sexes, at greater length, in the article GENERATION, of Dr. Rees's Cyclopædia, under the head of *Hermaphroditism*.

mities, and having their respective tarsi, meibomian glands, &c. There may be two optic nerves joined into one, two lacrymal glands, and one large crystalline lens. The iris in one case was almost double, the lens simple. Indeed, in all the instances, there have been more or less plain marks of the apparently single organ being composed of the parts of two eyes. This kind of deformity is not uncommon in animals*.

2. The unnatural positions of parts are exemplified in the passage of the abdominal viscera through an aperture of the diaphragm into the thorax; and in their protrusion at the navel.

3. The want of brain and spinal marrow, and of heart, as in the cases related at the beginning of this communication, illustrate the third species of unnatural formation†.

4. Supernumerary fingers and toes do not constitute a sufficiently striking deviation to deserve

* See Haller, *Oper. Minor.* tom. III. p. 38, for an example in the lamb; *Soemmerring, Abbildung*, &c. p. 31, in the pig; *Mem. de l'Acad. des Sciences*, 1703 and 1744, in the dog; *Philos. Transact.* No. 456, in the sheep; *Buffon, Descr. du cabinet du roi*, tom. XIV. pp 392, 394, in the dog and pig; *Hist. Nat.* tom. VI. p. 58, in the cat.

† The examples of deficiency of less important parts are numerous, as of the external ears, the soft palate, of some fingers and toes, or of the whole limbs. The absence of the front limbs we have recorded in the cat, dog, and horse.

the name of monstrosity. There may be five fingers, or a small additional thumb in the hand; and six toes in the foot. In some instances this variety has existed in several individuals of the same family, and has been transmitted through two or more generations, both by the father and mother*. Analogous appearances have been noticed in animals, as the dog, pig, sheep, and common fowl. Supernumerary horns sometimes exist in the cow, sheep, and deer: and in the *ovis polycerata* this variety seems to have become permanent, like that of the supernumerary toes in the *gallus pentadactylus*. Supernumerary extremities are by no means uncommon in animals. Examples may be seen in Haller, in all the domesticated species, as

* Reaumur has published an account of a family, in which this unusual number of toes and fingers, beginning in a male, existed in three generations. *Art de faire éclore, &c. les oiseaux domestiques*, tom. II. p. 377.

Maupertuis gives a corresponding example, where it began in the female, and had recurred in four generations. *Œuvres*, tom. II. p. 275. Mr. Carlisle has also recorded the occurrence of supernumerary fingers and toes in four generations, of a family into which it was introduced by the female. *Philosophical Transactions*, 1814, Part I.

In all these families, several of the children were naturally formed. One of the children of a six-fingered and six-toed father, had only five fingers and toes; but some deformity was observable in the thumbs, and two first toes. His offspring had six fingers and toes. Reaumur, *lib. cit.* See also, on this subject in general, and on the anatomy of the supernumerary parts, *Recherches sur quelques conformations monstrueuses des doigts dans l'homme*, par M. Morand, in the *Acad. des Sciences*, 1770.

the horse, dog, cat, cow, sheep, pig, goat, also in the hare, in the common fowl, duck, goose, sparrow, dove, goldfinch, and in the frog *.

Examples of any other parts, besides the limbs, being thus attached to bodies otherwise perfect, are less common. An ox is mentioned in the Philosophical Transactions, Vol. XLIX. with an additional head attached under the lower jaw; and a cow was exhibited as a public shew, with two heads and necks.

The Indian child with a double head, described by Sir Everard Home, in the Philosophical Transactions, Vol. LXXX. is an instance of a very rare kind of deformity.

Winslow saw in 1698, an Italian, who had another head much less than his own, connected to the chest below the cartilage of the third rib. It had been baptized separately from the other. It adhered by the lower half of the right side of the face and head; so that the right ear and surround-

* Oper. Minor. tom. III. p. 50, *et seq.* See also Mem. de l'Acad. des Sciences, 1733, p. 141, for an instance of two additional lower extremities projecting between the hind legs, in a full grown and perfectly well formed sheep dissected by Morand. This additional part had its own kidneys, organs of generation, large intestine and anus, and branch of the aorta and vena cava. For a similar instance in the cow, see Philosophical Transactions, Vol. XLIX. p. 183.

ing parts were not seen. All the rest of the head and face, with the hair, and most of the neck, the eyes, nose, mouth, teeth and chin, were very distinctly visible. This Italian felt whatever affected the additional head*. The same anatomist saw a girl twelve years old, well formed, and of the ordinary size, with the abdomen and lower extremities of another body hanging from the left side of the epigastric region. This second body was small; it had a row of vertebræ connected to the sternum of the larger; and fæces were discharged from it. The formation of the parts composing it seemed natural in every respect. The girl felt perfectly whatever touched this additional body. In this instance there was a doubt whether the child should be considered as one or two; and Winslow was sent for, not only to afford his medical assistance, but also to consider whether extreme unction should be administered to the little sister as well as to the entire body †.

Montaigne has related a similar instance with his accustomed clearness and *naiveté*. “ Je vois avant-hier un enfant que deux hommes & une nourrice, qui se disoient estre le pere, l'oncle, et la tante, conduisoient pour tirer quelque soul de le montrer à cause de son estrangeté. Il estoit en tout le reste d'une forme commune, et se soubstenoit sur ses pieds, marchoit et gazouilloit, à peu

* Mem. de l'Acad. des Sciences, 1733, p. 366.

† Ibid.

prèz comme les autres de mesme aage. Il estoit aagé de quatorze` mois justement. Au dessous de ses tettins, il estoit prins et collé a un autre enfant, sans teste, et qui avoit le conduict du dos estoppé, le reste entier; car il avoit bien l'un bras plus court, mais il lui avoit esté rompu par accident, à leur naissance: ils estoient joincts face à face, et comme si un plus petit enfant en vouloit accoller un plus grandelet. La joincture et l'espace par où ils se tenoient n'estoit que de quatre doigts, ou environ, en maniere que si vous retroussiez cet enfant imparfait, vous voyiez au dessous le nombril de l'autre: ainsi la cousture se faisoit entre les tettins et son nombril. Le nombril de l'imparfaict ne se pouvoit veoir, mais ouy bien le reste de son ventre: voylà comme ce qui n'estoit pas attaché, comme bras, fessier, jambes et cuisses de cet imparfaict, demeuroient pendants et branslants sur l'autre, et lui pouvoit aller sa longueur jusques à my jambe. La nourrice nous adjoustoit qu'il urinoit par toutes les deux endroicts; aussi estoient les membres de cet autre nourris et vivants et en meme poinct que les siens, sauf qu'ils estoient plus petits et menus *."

A more remarkable instance, in which at least the additional being was more perfect, was exhibited in many of the principal cities of Europe. It was seen by Zacchias†, and Bartholin‡, who

* Livre ii. Chap. 30.

† Question. Medico-legal. lib. vii. tit. 1. quest. 9.

‡ Hist. Anatom. cent. 1. hist. 66.

viewed it, as he says, with great astonishment (*cum stupore.*) The individual, Lazarus Colloredo, was 28 years old, well formed, and of the usual stature: he had a deformed twin brother, hanging by the chest from the lower part of the sternum, who had been christened by the name of Johannes Baptista. The latter had two arms, with three fingers only on each hand, and one imperfect lower extremity. The head was larger than that of Lazarus, but not well formed; it was well covered with hair, and there was no beard; the trunk seems, from the figure, to have been very imperfect; the eyes were generally closed, the mouth open, and yielding a constant flow of saliva; respiration was hardly perceptible: there was a pulsation in the chest; the hands, ears and lips could be moved; John Baptista was nourished by the food taken by Lazarus. Zacchias, who was chief physician in the Ecclesiastical States, enters into a discussion whether John Baptista had a rational soul, which he determines in the negative, and hence seems to have doubted whether it was right for him to have undergone the holy rite of baptism. “*Scio hunc puerum seorsim a perfecto fuisse baptizatum: an recte, et secundum rationem id factum, neque affirmo, neque nego; quod enim ecclesia catholica in hoc determinet, expecto, cui et in hoc et in ceteris omnibus humiliter me subjicio*.*” He determines that the additional

* Question. Medico-legal. lib. vii. tit. i. quest. 4.

beings in these cases are, "*additamenta ex luxuriantem semine enata, et quod nullam, ne per somnium quidem, rationalis animæ potentiam sortirentur.*"

In the LXXIXth Volume of the Philosophical Transactions, there is an account of a handsome and well-made Gentoo boy, of good sense and sagacity, who has a little brother suspended by the pubes, and consisting of pelvis and lower limbs. He feels what is done to the brother, but cannot move the legs and feet, which are cold.

The united fetuses form a very numerous class of monsters, both in the human subject and in animals; and we meet with this kind of unnatural arrangement in almost every possible degree, from the slight indication of a head composed of two joined together, to two bodies, apparently perfect in all their parts, adhering at some point to each other. We might form a series, having at one end a body naturally constructed, and at the other two natural bodies joined, in which the intermediate gradations should be filled by individuals differing almost imperceptibly from each other. In all these specimens, the parts placed at the point of union are the most worthy of notice; they are not like the organs of a natural body, but exhibit unions of the parts of two bodies in various degrees and shapes. If it were possible for two heads, from each of which one-third or one-fourth had been

cut away, to be joined and grow together by the cut surfaces, we should have the appearances exhibited in these cases. In the same way two trachæas or œsophaguses, coming from the two halves of a double head, are united below into one tube; or the small or large intestines from two distinct upper portions of a body are joined into one canal, or the blood-vessels united in the same way, or the skeletons joined in various manners; or, on the contrary, the organs may be simple above, and bifurcated downwards, to produce double parts for double bodies. In all such instances organs are formed, for which there is no model in the common structure; the points of bifurcation, or division of the various canals mentioned above, are like nothing in the naturally formed body. A very complete series of fœtuses with compound heads is exhibited in Soemmering's work *. The first † has a broad head, with a fissure in the nose and upper lip, on each side of which are two-thirds of a nose. The next in order is a head of such size and form, as would result from joining two two-third heads ‡. The halves of this double head are symmetrical, and resemble each other in all respects; the features are perfectly alike, and each upper lip has a cleft in it. The same close resemblance of the features is observed in other instances. In the middle of this broad-head,

* Abbildung und Beschreibung einiger Missgeburten, &c.

† Lib. cit. pl. II.

‡ Lib. cit. pl. III.

of which each lateral division contains its nose, mouth and eye, there is a large eye; each lid of this is composed of two united by their outer extremities in the middle of the lid; a deep depression divides the globe behind into two parts, each of which has its optic nerve. A sharp projecting ridge, corresponding to this depression, formed the back of a septum, dividing the interior of the globe; the two choroids, lying in contact, continued this partition, but it did not reach to the cornea. The two irises were united, and formed one large pupil; a pointed projection in the middle of the upper and lower edge of this, as well as its breadth, shewed that it was made of two joined together; we have then a head formed of two three-quarter faces, containing four well-formed eyes, of which the two middle have their outer angles united in the middle of the head*. In the next specimen the two inner eyes are apart from each other, and a depression above marks the distinction of the two heads: the bottom of this is filled by an irregularly formed external ear, appearing as if it had been made by blending the opposed ears of the two heads†. In the preceding instances there have been only two ears; here there were three, two of the ordinary structure, and a third compound one. There is a still more complete division of the head into two lateral heads: in this there are four ears, and the two middle ones are in

* Lib. cit. pl. V.

† Lib. cit. pl. VI.

contact at their convex surfaces *. The cases just described are followed by others, in which there are two completely distinct heads, joined higher or lower in the neck †. In following the series we come to specimens, in which the double parts of the body are continued farther down than in the preceding class. There are two heads, and necks, and two arms; the double parts join in the chest, and the body is single below ‡. The union may take place lower down in the chest, or in the abdomen or pelvis: there are three or four arms in such cases, and two lower limbs §.

There is a class of monstrous foetuses exactly the reverse of the preceding: these creatures are double below and single above. Like the former, they may be arranged in a regular series, according as the double parts ascend higher and higher in the body. In the simplest specimens the body is single down to the pelvis, and double from that point; or it may be double up to the abdomen, to the chest, neck, or head. Haller || has given a very detailed account of a pig, in which the face

* Lib. cit. pl. VII.

† See Sahler, Diss. de foetu bicipiti, Desil 1786. Prochaska, Annot. Acad. fascic. I, tab. I. *Monro on the Nervous System*, tab. 8.

‡ Hist. de l'Acad. des Sciences, 1745, p. 29.

§ Duverney in Comment. Acad. Petrop. t. 3. p. 188. *Philos. Trans.* No. 138. *Mem. de l'Acad. des Sciences*, 1724. p. 63, Haller, de Monstris, lib. 1. cap. 21, 28. in *Oper. Minor.* t. 3.

|| Haller, de Monstris, lib. 1. cap. 16. in *Oper. Minor.* t. 3.

and upper part of the cranium were single, the lower portion of the cranial cavity, and all the organs thence downwards were double. The bones in front of the head were single; there were two occipita, and two skeletons from this point downwards, differing from the ordinary arrangement only in the sterna; each of which received a row of ribs of each body, *i. e.* to one sternum were attached the right ribs of one body, and the left of the other, and *vice versa*.

To a simple cerebrum were connected a fissured medulla oblongata, two cerebella, medullæ spinæ, &c. The blood-vessels of the two bodies were curiously arranged about the hearts, of which there were two, one receiving the veins of the left body, and sending an aorta to the right, while in the other these relations were reversed. Just behind their arches the aortæ were joined by a short but large communicating branch.

Haller has collected many instances of this formation in the human subject, and in animals, as the dog, cat, goat, horse, hare, rabbit, fowls, &c.*

Through the preceding classes there is a gradual approach, from the single body to the union of two, in other respects perfect bodies. Haller has given a detailed description of a double child, consisting of two perfectly formed girls, of the ordinary

* Lib. cit. c. 17 and 18.

size, united by the chests and epigastria. There was one large liver with two gall-bladders; one heart with a double set of vessels; the veins all opened into a single auricle, and there were two ventricles, from each of which an aorta and a pulmonary artery proceeded; all the other parts were double; indeed, there were two bodies almost entirely distinct; the two sterna were both common to the two bodies, each receiving a series of ribs from each child, and a clavicle of each*.

The formation of the bodies is so perfect in many of these cases, that it will be inquired, why they should not continue to live after birth. Probably the violence to which they are exposed in parturition, and the duration of that process consequent on this difficulty, may be the cause of their destruction. The malformation of the heart in some cases would hardly admit of the continuance of life after birth; but in other instances there have been two well-formed hearts. In a few cases they have lived for a longer or a shorter time. Two children joined by the abdomen, double above, and having one pelvis and penis, and two lower limbs, but no rectum, lived seven days†.

The most extraordinary instance of this kind is

* Lib. cit. c. 29. In the 30th, 31st and 32d chapters, Haller has collected a great number of instances of similar monsters, both in animals and in the human subject.

† Journal des Savans, 1684, p. 27.

that of the united twins, born at Szony in Hungary, in 1701, publicly exhibited in many parts of Europe, and among others in England, and living till 1723, when they were buried in the convent of the nuns of St. Ursula, at Presburgh. They were joined at the back, below the loins, and had their faces and bodies placed half sideways towards each other. They had one anus and one vulva. The viscera were all double, except that the two vaginæ united into one towards the external aperture, and the two recta were joined in the same way. There were two bladders and urethræ opening separately. The two sacra were blended into one, and had a single os coccygis connected to the lower end. The two aortæ were joined into one tube before their division into the iliacs; and the inferior venæ cavæ were united at the same part. They were not equally strong nor well made; and the most powerful, (for they had separate wills) dragged the other after her, when she wanted to go anywhere. At six years one had a paralytic affection of the left side, which left her much weaker than the other. There was a great difference in their functions in health and disease. They had different temperaments. Neither the alvine nor urinary evacuations were always performed at the same time by both sisters; the menses happened at different times, one having them a week or more after the other; sometimes one, sometimes the other would be most disordered at such periods; when one was asleep the

other was often awake ; one had a desire for food when the other had not, &c. They had the small-pox and measles at one and the same time, but other disorders separately. Judith was often convulsed while Helen remained free from indisposition. One of them had a catarrh and a colic, while the other continued well. Their intellectual powers were different ; they were brisk, merry and well-bred ; could read, write, and sing very prettily ; could speak several languages as Hungarian, German, French, and English. They died together*.

Beings included in the bodies of others are the most uncommon kind of monstrosity ; yet we have some well authenticated cases.

In the Gentleman's Magazine for December, 1748, mention is made of a child born with a large bag, extending from the fundament to the toes. It burst a few days after birth, and exposed an irregular mass of florid flesh, in which a hand and foot with perfect fingers and toes could be distinguished. There was no other visible distinction of parts or sex. The child fed heartily.

A foetus was lately discovered in the abdomen of a boy fourteen years old in Paris. I have seen

* Phil. Transact. Vol. I. G. C. Drieschii historia magnæ legationis cæsareæ, &c. p. 41. Haller, lib. i. cap. 28. and lib. ii. cap. 26, where some other instances are quoted.

no detailed account of this occurrence, which is mentioned in the "Bulletin de l'Ecole de Medecine," in the "Gazette de Santé, 1804," No. 1. and the "Journal de Medecine," an. 18.

But the instance recorded by Mr. G. Young in the "Medico-Chirurgical Transactions," Vol. I. is the most minutely described, and the best authenticated, as the parts were seen at the time by the principal medical men in London.

Another example has occurred in this country, within a short time, in which the containing boy lived in good health to the age of about fifteen years. The contained child (a female of considerable size, wanting the hand and one lower extremity) was found in a cyst largely communicating with the duodenum; it adhered to this cyst by a firm cord of the size of the little finger, attached to its body in the situation of the umbilicus. A description of it, by Mr. Highmore who found it, is advertised.

Remarks on the production of these unusual formations.

There is a very important ground of distinction, in conformity to which, on the first view, we separate them into two classes: those which are, and

those which are not capable of supporting life after birth. To the former belong all varieties, and some of the monstrous formations; to the latter most of the monsters, as the headless and heartless children; those with imperforate anus, with communication between the trachea and œsophagus, with uncovered viscera. In the former there is another distinction between the instances, in which the natural functions are all perfectly executed, and those in which life is continued for a certain length of time with inconvenience and suffering, and then prematurely ended. The varieties of a slighter kind, and in unimportant parts, belong to the first of these divisions; malformations of the heart and of the urinary organs, spina bifida, &c. to the second.

Again in some kinds of malformation, the vital powers seem as perfect as in the ordinary formation, but the mechanism is imperfect, as in club-feet and other erroneous organizations or deficiencies of the limbs.

It is very clear that the great deviations from the accustomed standard, producing monstrosities, are generally incapable of life; and we can understand the reason of this in many cases, where the heart or brain is deficient, &c. But in other instances where no such satisfactory cause is apparent, experience shews us that these monsters are generally cut off.

The fœtus is often ill-formed in abortions* ; the vital powers in monsters do not seem adequate to maintain the comparatively simple existence of the fœtal state : if, however, they get over this danger, the hour of birth is generally with them the hour of death. There are many possible arrangements differing from the ordinary type in which the functions would have been all preserved ; but this would interfere with another principle, which seems

* I have stated this point at greater length in the following passage of the article Embryo, in Dr. Rees's Cyclopædia. "It is true, indeed, that the fœtus in abortions is often ill-formed, being smaller than it should be, deviating from the usual proportions or monstrous ; and very probably this malformation may be one of the causes why such embryos die, and are separated with the ovum from the uterus ; just as we see that mis-shapen or worm-eaten fruits seldom arrive at maturity, but have their further growth impeded by that very cause." To the same purport it is observed by Autenrieth, "that he found three monstrous fœtuses out of nineteen, whose parts could be distinguished ; that Wrisberg met with two among five, which he examined ; and Ruysch two in twelve ; the proportion of the whole being seven in twenty-nine. This large number, (if we consider at the same time, that all collections of anatomical preparations abound with monstrous fœtuses, which have died immediately after birth, while adult monsters are extremely rare) renders it very probable that nature employs the short but effectual means of extirpation, in order to preserve the genuine figure of the human frame, and that one model only of all those into which the human frame may pass, is endued with permanent vital powers." *Supplementa ad histor. embryonis humani*, sect. 8. This author observes, also, that a greater number of abortive embryos are of the male than of the female sex, and this observation is confirmed by Sæmmerring, who extends it likewise to monsters,

to prevail extensively in the operations of nature, viz. preservation of uniformity in the species.

Physiologists for a long time believed, and mankind in general are still firmly convinced, that the mind of the mother exerts a very potent influence on the formation of the child; and that her imagination or some peculiar mental state, is capable of producing even very signal deviations from the accustomed formation, after the natural development and growth have been very considerably advanced. It has been supposed that a sudden fright will cause a resemblance to the animal or object producing it, and that a violent desire or longing for any thing, particularly if it be not gratified, will cause a resemblance of the thing to be marked in some part of the child's body. The names given to the marks sometimes observed in newly born children, shew how generally the opinion has prevailed; viz. *nævi materni*, in Latin; *muttermahl*, or *mutter flecken* (mother's spots), in German; *envie* (longing) in French. Matrons and nurses, the hereditary priestesses of Venus and Lucina, and the great authorities to the uninitiated, on all the mysteries of generation, often contrive to keep a mother doubly anxious for herself and her offspring, in a state of alarm throughout her pregnancy, lest the sight of something frightful or disgusting, the longing after some object, &c. should convert the child in her womb into a monster.

In the first place monstrous productions are often brought forth, when the mother has been conscious of no cause during her pregnancy, that could be thought likely to produce them. The strong desire, common indeed to both sexes, of being thought capable of executing the generative functions perfectly, and the uneasiness accompanying any supposed failure, induce midwives, when a monster is brought forth, to conceal it from the mother's knowledge, which, as they generally die after birth, is easily done. If, however, she should learn the occurrence, she recalls to her recollection whatever has happened in her pregnancy, and can hardly be at a loss for some longing, aversion or fright, to which she refers what might otherwise bring into question her fitness for these important functions. How are *nævi* and other unnatural formations to be accounted for, when no mental cause is remembered, or, when the monstrosity not being known to the mother, she never mentions any such occurrence?

A knowledge of the different kinds, and of the anatomical structure of monsters, affords very strong, and indeed incontrovertible proofs of the absurdity of the common notions. The most zealous advocates of the opinion, which indeed only makes the matter more obscure, will hardly contend that the imagination of the mother can annihilate one-third or one-fourth of a head, and adapt to it an exactly corresponding piece of another

head, resembling it so exactly in size, form, features, &c. If it should not be difficult enough to account for the production of this symmetrical double head, a harder task remains; viz. to explain how the imagination of the mother changes nearly half the body; for the vertebral column may be double, the breast consequently broader, &c. in such an example.

We shall again ask how longing or fright can dispose of the brain, membranes, scull, scalp, &c. as in the acephali? How it can stop up the anus, or annihilate the nose, and bring together and confound in one the two eyes?

Do pigs, horses, hares, &c. long? Are pigeons and fowls given to these fancies? or does the same effect arise from one cause in men, and from another in animals?

How does the explanation apply to trees, and other vegetables, in which monstrous productions are not rare?

That the vulgar, who know only the surface of things, and are contented with the most distant resemblances and the loosest analogies, should ascribe the hare-lip to the sight of a hare, is not very strange; but we should hardly believe, if it were not before our eyes in print, that Heister *

* Observ. Med. Miscellan. obs. 14.

describes an acephalous foetus, with divided lip, as the result of such a cause. The mother of a similar child, described by Sandifort, ascribed the deformity to a fright caused by a monkey. Now, what resemblance is there between a hare or a monkey, and such a child? What between a hare and a monkey? All the monsters of this description are remarkably alike; in my judgment, they do not bear the most remote resemblance either to a monkey or a hare; and I have already mentioned that they have gained the common name in Germany of cats'-heads. If we go back into times a little more remote, as 1670, we shall meet with children resembling devils. Kerkring * gives us a figure, with the following inscription: "*Monstrum cacodæmonis picturæ, quam humanæ figuræ similius.*" The fingers in the engraving have something of the character of claws; and the mother fancied that she had had intercourse with evil spirits: "*Jam sibi cum malis geniis congressa videbatur.*" The gossips thought the child like an imp; and Kerkring found it in no respect like a human being, but rather like an ugly monkey: "*Caput nihil habebat, quod hominem referret. Facies simiæ, eique deformi simillima.*" Is it not very clear that the imagination is much more powerfully at work in these good people, than in the poor mothers? Devils, apes, hares and cats are all alike to them. It is difficult to contend

* Spicileg. Anat. obs. 23.

against such adversaries : if they are driven from their monkies and hares, they conjure up, and array against us, imps, demons, and other phantoms of their brains.

In cases of hare-lip, the parts do not resemble the snout of a hare, but are formed in quite an opposite way. The upper jaw-bones are drawn apart, and the face consequently more than usually broad, instead of being narrow and standing forwards, as in the hare. The lip of the hare is not fissured, but merely notched, and covered with long stiff bristles. The fissure of the lip is often the smallest part of the deformity in the human subject ; there is a division through the whole of the bony and soft palate, to which a hare's head has nothing analogous.

The productions of the skin, which are compared to strawberries, mulberries, raspberries, &c. are so obviously unlike these objects, that it would be a waste of time to say any thing on the subject. Let it be observed too, that hare-lips, and other monstrous productions, and nævi, are seen in situations where there are no hares, no raspberries, cherries, &c. to cause them.

Women generally refer to frights, longings, and other mental impressions in the latter months of pregnancy : at earlier periods they do not feel the fear of such occurrences. Now, monstrous fetuses

are seen at all times of utero-gestation, from the first recognisable existence of the child; and the foetus is ill-formed or monstrous in a large proportion of abortions, which occur for the most part before the time at which the apprehensions begin.

The child does not participate in most of the bodily affections of the mother, and apparently is uninjured in many very serious and extensive disorders: at least, strong and well-formed children are brought forth by mothers, after going through such diseases. Is it reasonable to suppose that the sight of an animal, or the mere wish for an article of food, should have effects, which the much more serious causes do not produce? We know that if a pregnant woman has a limb broken or amputated, she will nevertheless produce an entire child; yet, we are gravely told, that if she sees such things in another, her child will suffer.

But it is needless to pursue further a question, on which all rational persons well acquainted with the circumstances are already unanimous; to explain that there is not a single fact even approaching to a proof, that the mother's imagination ever had any effect on the form of a child; that none of the numerous monsters resemble, in any essential character, the objects to which they are compared, and most of them, as the brainless and those without hearts, the double foetuses, those with redundant parts, as the two-headed, &c. correspond to

no archetype in nature ; and that when dissection is employed, unusual arrangements of important organs, like nothing else in heaven above, or the earth beneath, are found in abundance. This belief in the power of imagination, like the belief in witchcraft, is greater or less according to the progress of knowledge, which in truth differs greatly in different countries and heads. We know that many enlightened women are fully convinced of its absurdity, while *soi-disant* philosophers are still found to support it.

The production of monsters has been explained mechanically by some physiologists : they have supposed that deficient parts are destroyed by external pressure or violence ; that superfluous parts are remains of another foetus becoming adherent to a perfect one ; and that compound children are made of two growing together. This is a perfectly gratuitous hypothesis, and is repugnant to all our knowledge concerning the animal œconomy. By what facts are we justified in believing that the ribs of two foetuses, and the clavicles, can detach themselves from their respective sterna, and become fixed, each to the sternum of the other, as in the skeleton of the double foetuses ; that two perfect hearts, if the chest could be thus metamorphosed, could be united into an organ with one auricle only, and with two ventricles, of which each produces a pulmonary artery and an aorta ; that a new communicating channel should be

formed between the two aortæ, as in the double bodied pig already described, and in the Hungarian sisters? If we could believe all these wonders, it would not be sufficient; for monstrosities occur when there has been no violence inflicted during pregnancy. We cannot help being surprised that Haller, who shews how inadequate this explanation is to the solution of the phænomena, in most of the monstrous births, should admit it in any kinds. Yet he considers it as perfectly applicable to most of the unnatural positions of parts; to some unnatural formations; to the absence and division of organs, and to some cases of preter-natural unions: he refers the hare-lip to a want of the cellular substance, that should unite the superior maxillary bones, and conceives that parting of the bones lacerates the lip *. He ascribes the appearances in the acephali to accidents during utero-gestation, destroying the brain and its case. The respect due to the name of Haller, a name so dear to all who interest themselves in physiological pursuits, leads me to bestow on these opinions a degree of notice which they would not otherwise gain. Let us allow, what is not supported by a shadow of proof, that a force can be applied to the child in utero, capable of causing this extensive destruction; how does it happen that the head should be destroyed in all cases just so far as the orbits? It must either take place suddenly or gradually. The former

* Lib. 2. cap. 13.

cannot be the case, for the brain and its membranes could not be annihilated without killing the child : moreover in the frequency of these cases how does it happen that the head is never found in this bruised condition ? If it be the consequence of gradual pressure, how surprising it is that the destruction should always be found precisely at the same point, that no specimens of an earlier or later stage should ever have been met with ! How is the presence of the hair at the edge of the integuments, where it does not exist naturally, to be accounted for ? Why are females so much oftener the subjects of such accidents than males ? Why do not other parts suffer in the same way, since the brain is protected by a bony case at an early period, while the bones in other parts are internal ? How does external force destroy the spinous processes of the vertebræ through the integuments in spina bifida ?

In order to prove that a brain has existed, and has been destroyed in these cases, Haller observes that it is quite contrary, not only to the wisdom of nature, but to common sense, for arteries, veins, and nerves to be made in a skull, where there is no brain. This is a dangerous argument : is it not equally contradictory that a rectum should be formed without an anus, since life cannot be continued without such an opening ? If nature be so wise and careful, why did not she provide against the destruction of the head ? And why does she

go on working month after month, to no purpose, in constructing the numerous other monsters, which are incapable of life? Not contented with exercising his mental faculties on what comes under the operation of his senses, and exploring the instructive scenes of nature, man is ever disposed to enter the regions of imagination, and to give to the beings of his fancy, whom he first clothes with all the attributes of perfection, the designs and actions which accord only with his own shortsightedness and ignorance. He is as positive about what goes on in this unseen region, as if he directed all the operations himself, and can tell you very precisely what does, and what does not harmonize with the wisdom of the Creator, which turns out at last to be the exact representation of his own knowledge or prejudices. Why may not arteries, veins, &c. which usually belong to a brain, be formed without a brain, as well as a rectum without an anus, heads without eyes, and all other imperfect monsters? It is enough that the thing happens: whether nature has any design in these formations, or not, we leave undetermined, until we are informed of some data on which a decision may be grounded.

Morgagni has supposed that the acephali may have had hydrocephalus; and that the brain may be destroyed by the water; and this is called an explanation! A learned professor, to be sure,

would lose his character if he had not a reason for every thing that happens.

In endeavouring to fix the point of view in which these deviations ought to be regarded, I observe that they are not confined to the human subject, but are very common in animals. All the kinds of monstrosity have not been noticed in the latter: at least I find no instances recorded of hare-lip, of want of brain and heart, of spina bifida, of malformed urinary organs, nor of such general malformation as is exhibited in the two instances related in the beginning of this communication. But united foetuses, supernumerary limbs, and unnatural arrangements about the eyes and nose, are very frequent. I observe further that such monstrous productions are almost, if not entirely, confined to domesticated animals.

The powerful influence of domestication on structure will be rendered evident by the slightest survey of the animal kingdom. Contrast the uniform adherence to one model in the wild species, with the endless diversities of form, size, and colour in all the tamed kinds. To trace back domestic animals to their wild originals is in all cases difficult, in many impossible: long slavery has so degraded their nature, that the primitive animal is lost, and a degenerated being, running into endless varieties, is substituted in its place. Naturalists are by no means agreed about the wild stock, from

which the sheep, cow, dog and common poultry have descended *. When the bodily characters are thus changed, can we expect that the functions should remain the same? The wild sow brings forth only once a year, while the tame one farrows twice: the latter very often produces monstrous births, which are unknown in the former. The hydatids interspersed through the body, in the interior of muscles, viscera, &c. and constituting measly pork, are asserted, with every appearance of truth, to be peculiar to the domestic pig †. If this assertion be correct, we have a new species of animal created by domestication; a new link added to that chain of beings, of which the completeness and perfection form so favourite a theme with many writers. The changes produced by the state of domestication in the animal economy are further evinced by the diseases of our more valuable domestic animals, which are sufficiently numerous to employ a particular order of men. The horse and dog ‡, like

* I have stated this argument at greater length in discussing the *causes of the varieties of the human species*, in the article *MAN* of Dr. Rees's Cyclopædia.

† Blumenbach, *Abbildungen Naturhistorischer Gegenstände*, 4es. heft. No. 39. He gives good figures of the animal which he calls *Hydatis Finna*.

‡ The dogs in Kamtschatka, where they are raised in great numbers, and trained and attended with the greatest care, on account of their invaluable services as draught animals, are subject to ruptures, dysenteries, and, according to the assertion of the Kamtschatkans, almost all the diseases incident to mankind. Langsdorff's *Voyages and Travels*, vol. 2. p. 288.

their master, are provided each with its respective medical attendants; and the poor Canary birds seem equally to want professional assistance, since Buffon has enumerated inflammation of the bowels, asthma, epilepsy, chancres on the bill, and scabs among the diseases to which they are subject *.

The circumstances just mentioned; the great abundance and numerous kinds of monsters found in the human subject, their comparative rareness and fewer species in the domestic animals, and their entire absence in the wild races, lead us to suspect that they owe their origin to something connected with our peculiar mode of existence in this respect; in short they resemble our diseases, which I believe to be altogether unknown to animals in a state of nature, and to exist in greater number, in proportion as they are more and more completely domesticated. At the top of the scale, whether we regard the number, the complication, or the severity of his diseases, stands the lord of the Creation; he has in truth created arts and sciences, made wonderful progress in knowledge and civilization, and he may boast that he has subdued both animate and inanimate nature; but the long and appalling catalogue of the nosologist is well calculated to

* Natural History, Ed. in 20 vols. by Wood, vol. XIV. p. 87. For a further prosecution of these views, see the article MAN quoted above, in the account of diseases peculiar to the human subject.

check his triumph, and make him doubt whether he has not paid too dear a price for empire.

Generation is a function not differing in its essential characters from the other processes of the animal economy. The production of a new being seems on a superficial view so much like creation, according to the notions which men have amused themselves with framing on that subject, that they have conceived it to require some preternatural agency. Regarding this business then as the work of God, and having already assumed that all his works are perfect, they maintain that the young animal is originally perfect, and degenerates into a monster through the action of external forces. More accurate observation discloses to us in this affair merely the operation of secondary causes, and exhibits to us the production and development of the foetus, as the result of vascular action in secretion and nutrition : in short, however his pride may be offended at hearing it, the simple truth is, that man, considered at the epocha of his first formation, is merely a secretion from the vessels of the ovary.

The function of generation is not more exempt from the operation of disturbing causes than any other in the animal economy. Any violent and sudden impression interrupts it at once by causing abortion ; but minor causes, although their effects are not seen, are not to be deemed inoperative.

Particular bodily formations, particular mental characters, and dispositions to certain diseases, &c. are transmitted to the offspring. Indeed, how can we expect that when all the rest of the being is artificial and vitiated, this one part should be undisturbed? I ascribe then the aberrations from the usual form and structure of the body, which constitute monsters, to irregular operation of the powers concerned in generation, and place them on a level with respect to their cause, with unhealthy executions of the nutritive, secretory and exhalant functions. I only mean by these observations, to refer the aberrations of the formative process to the same general principles as the other deviations from the healthy execution of functions, and to protest against the considering them as forming a peculiar case out of the common rules applying to organized beings.

The cases of creatures contained in the bodies of others must be regarded in the same light as the double fœtuses, or the examples of additional parts annexed to a natural body : they are neither more nor less difficult to be accounted for. I can only view them as the result of original malformation. The recent case of this kind has been explained by supposing that the containing child had swallowed an ovum in utero, or that it had been impregnated by unnatural practices : these speculations being too ludicrous for any serious discussion, I pass them by without further notice.

Monsters, in which considerable parts are wanting, seem peculiarly likely to assist in the prosecution of physiological researches. If we never saw animals, except in a perfect state, we could not form just ideas of the comparative importance of the different organs. And if we attended only to the complicated structure of the more perfect animals, we should probably conclude that the connection of parts found in them was essential to the execution of vital functions. Of these parts, the brain and nerves, the alimentary canal and its appendages, the heart and lungs seem so important that we should probably conclude life could not go on without them. But, in the simple animals, which compose the lower orders, many of these parts do not exist, although they can execute the most important animal functions. This great simplicity of structure is observed chiefly when the body is homogeneous, not consisting of parts so different from each other as skin, muscles, viscera, bone, &c. We might, therefore, still suppose, that all the complicated mechanism, found in the more perfect animals, is essential to the construction of such heterogeneous substances, as those of which they consist. The monsters just described prove that this is not the case; they shew us that cartilage, bone, ligament, cellular substance, membrane, intestine can be formed, where no brain or nerve or heart exists, and where there is nothing further than the actions of the vascular system; and they lead us to conclude that the formation

and nutrition of our organs are the functions of the blood-vessels only. At all events they exclude the brain, nerves and heart, from all participation in this process.

The nature of foetal existence is considerably elucidated by these monsters. Superficial observation will convince us that the life of the foetus is very different from that of the animal after birth. The former is the most simple kind of vitality ; it includes merely the developement and growth of parts, which, although useless in this stage, are essential afterwards. That the lungs are of this kind, is generally admitted : we must adopt the same conclusion concerning the heart. A little reflection shews us, that the brain and nerves are equally inessential to foetal existence. The nerves transmit impressions from without ; the brain perceives these, reflects and wills ; the nerves again convey the influence of the brain to the muscles. Although we cannot clearly prove the point, we think there is very little reason for hesitation in affirming, that none of these processes take place in utero ; consequently, that the brain and nerves are completely inactive. The alimentary canal, and the organs connected with it, the urinary apparatus, which disposes of the residue of nutrition, are suited to the subsequent stage of existence, and bear an obvious relation to the mode in which the body is nourished after birth ; they are dormant while the animal remains

in utero, during which time the materials of its nourishment and growth are drawn from the mother, through the placenta and umbilical chord. It is hardly necessary to say any thing of the generative organs, as they are not called into action until many years after birth, and are then not very closely connected to the rest of the system; at least their absence or inaction does not produce any consequences that endanger the existence of the animal. We should infer then, that the whole growth and formation of a foetal body depend on the actions of the vascular apparatus, which appear from cases, related and quoted in this paper, to be fully equal to the task.

The acephalous monsters shew us the independence of the nerves on the brain, so far as their formation goes; and they evince very clearly the independence of the formation and growth of the organs in general on the brain. For these individuals are perfect in the size and form of all their parts: any organ or limb could not be distinguished from that of the most regularly constructed foetus with a brain*.

* However obvious these conclusions may appear, they have been overlooked, even by modern and celebrated writers. Cabanis states expressly that the heart and brain are the first parts organised, the first which receive vital impressions and execute functions; that their functions are identified with existence itself; that they are to be regarded as necessary conditions, and in a manner as the basis of life. *Rapports du physique & moral de l'homme*, Ed. 2. tom. 2. p. 351 & 352. Haller regards the heart, not only as the source of all motion, but also as the agent
by

Many circumstances concur in proving to us the great influence of the brain in modifying the form of the skull, and shew us indeed that the configuration of the latter depends entirely on, or results from that of the former. The external protuberances corresponding to the front lobes of the cerebrum, and to the lobes of the cerebellum, in the natural state, cannot escape even superficial observation; and hydrocephalus illustrates the same point in disease. This fact, which is of great importance in the craniological doctrines of Drs. Gall and Spurzheim, receives a further and very striking confirmation from the entire want of cranium consequent on deficiency of the brain.

The brainless children are incapable of executing the functions necessary for the continuance of existence after birth. Respiration is performed by muscles deriving their power from the brain, and consequently cannot take place where there is no brain. If artificial breathing were carried on in these creatures, life might no doubt be prolonged for a certain time, as it is in decapitated or pithed animals under the like circumstances. We then come naturally to the question; what is the part of the brain, which exerts this influence over the respiratory organs? A question which has been solved by Dr. Le Gallois, an ingenious French ex-

by which the organs of the body are originally evolved and formed. *Elem. Physiol.* lib. 4, sect. 4. § 27 & 28. See also his last volume, on the development of the fœtus.

perimentalist. "Respiration," says he, "does not depend on the whole brain, but on a rather limited portion of the medulla oblongata, situated at a small distance from the occipital foramen, and towards the origin of the pneumo-gastric, or nerves of the eighth pair. If we open the cranium of a young rabbit, and extract the brain in successive slices from before backwards, we may remove all the cerebrum, and cerebellum, and a part of the medulla oblongata, without arresting the respiratory process. But this ceases as soon as we comprise in a slice the origin of the nerves just mentioned*."

"This part," he adds, "cannot exert its influence in maintaining respiration, unless it continues in a natural state. Now the great hemorrhage, occasioned by the operation in warm blooded animals, destroys circulation in the extremity of the medulla oblongata; and the serious wounds inflicted in the experiments have an influence on the surrounding parts, which quickly reduces the cut end of the medulla to a state of inactivity. Hence the experiments succeed only on very young animals, and for a space of time not greater than half an hour; but with these restrictions, the success is unequivocal †."

The result of these researches is remarkably con-

* *Experiences sur le principe de la vie, &c.* p. 37. Paris, 1812.

† *Lib. cit.* p. 39.

firmed by what happened in the case of the child mentioned in the beginning of this paper. Here the part of the brain, asserted by Le Gallois to be the spot, from which the respiratory muscles derive their power, existed, and very little more. This creature was formed in the condition to which the experimentalist reduced his rabbits: and we thus had an opportunity of seeing how long that place in the medulla oblongata could maintain respiration, when the deep wounds and hemorrhage of a severe experiment did not interfere with the process. Breathing went on as naturally as in a child with a perfect brain, and so far as this function is concerned, the creature in question might undoubtedly have continued to live. Why then, it will be asked, did it die? I really could not procure a sufficiently accurate history of its life to answer this question. Probably the same scruples, which led the nurse to keep it away from the sight of the mother, may have inclined her to doubt whether any attempts ought to be made to prolong its life: hence, we may perhaps infer, that it died for want of food.

The functions of the heart were executed perfectly in this child, and are equally well performed in those acephali, in whom the whole medulla oblongata, as well as the rest of the encephalon, is deficient. This coincides with the results of the very scientific and highly interesting researches of Mr. Brodie and Dr. Le Gallois, which have proved

that the heart's action is completely independent of the brain, and that the source of motion in this organ, is an influence exerted upon it by the *medulla spinalis*. If these views are correct, it will follow, that the heart cannot exist without a *medulla spinalis*; and, in all the recorded instances of malformation, there is no example of the former of these organs being found in a body, which had not the latter.

It is still a question in physiology, whether the process of glandular secretion be under the influence of the brain, and some attempts have lately been made, to shew that this question ought to be answered in the affirmative. There are many difficulties in the way of deciding the point by direct experiment, but there are strong analogies on the negative side. Secretion is performed by the minute vessels, all the other actions of which are manifestly exempt from the brain's influence. Capillary circulation; nutrition, in which the capillaries separate from a common fluid, the materials which they convert into all the various animal structures, and thus build up and support the different organs; the serous and mucous exhalations are all performed in *foetuses* without brain or spinal marrow*: they go on when the influence of the

* In the intestines of the *foetus*, included in the body of a boy, of which Mr. Young has given us so full, clear, and satisfactory a description, there was a considerable quantity of *mecconium*. *Medico-chirurg. Trans.* vol. I. p. 245.

brain is suspended in apoplexy, compression, and concussion: the two former and cutaneous exhalation are kept up in the limbs of the paralytic, and of animals, in whom all the nerves have been divided. Nutrition is performed in structures, which possess no nerves, as tendon, cartilage, &c. Serum and pus are formed when blisters are applied to paralytic limbs. When the nerves of the eighth pair have been divided, the air vesicles and tubes of the lungs become loaded with mucous fluid; the same phænomenon takes place in a still greater degree, when artificial respiration is carried on in decapitated animals, and it even seems in this case to be the immediate cause of death *. The

* In describing the lungs of animals, which have suffered the division of the eighth pair, Le Gallois says, " On rencontre le plus souvent dans les voies aeriennes un fluide écumeux, et par fois rougeâtre, assez abondant pour remplir les vesicules pulmonaires, et la plus grande partie des bronches, et qui boursouffle les poumons dans les espaces qui ne sont pas gorgés de sang. C'est surtout dans les lapins et dans les cochons d'Inde que ce fluide est abondant; on le voit souvent sortir par leur bouche et par leurs narines dans les derniers instans de leur vie. Après leur mort, il s'écoule par les incisions que l'on fait aux poumons, et meme il suffit souvent de faire une ouverture à la trachée, et de comprimer le ventre et la poitrine pour le faire affluer à cette ouverture." Exp. sur le principe de la vie, p. 221. He thus mentions the same fact in animals, where artificial breathing has been carried on after decapitation: " On trouve toujours les poumons gonflés et remplis d'un fluide écumeux. J'ai vu quelques fois l'épanchement de ce fluide porté au point de rendre l'insufflation impossible en moins d'une heure. Il survient plus promptement qu'après la section de la paire vague, et je l'ai toujours considéré comme la principale cause de la mort, toutes les fois qu'elle n'a pas dépendu de quelqu'accident manifeste." p. 240.

evidence afforded by the case at the beginning of this paper, coincides with these analogies in proving the independence of secretion on the nervous system ; as urine was secreted when neither cerebrum nor cerebellum existed. On the other hand, many phænomena may be adduced, which can be accounted for only by the agency of the nervous system ; as, for example, the increased flow of saliva on the sight of food, the augmented lacrymal secretion under various affections of the mind, the copious pale urine suddenly excreted in hypochondriacal and hysterical persons, &c. and the decided affection of the biliary secretion in some cases by mental emotion,

HISTORY
OF A
TUBERCULAR ERUPTION,
OF A
SYPHILITIC APPEARANCE,
BUT
CURABLE WITHOUT MERCURY.

By T. BATEMAN, M.D. F.L.S.

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Read Nov. 23, 1813.

WITHIN the last two years I have had occasion to see eight or ten cases of an eruptive disease, which does not appear to have been noticed by medical writers, and was not included in the enumeration of Dr. Willan, although it may probably be known to several of the experienced members of this Society. The appearances of the eruption have been remarkably uniform, and the general progress of the symptoms so nearly the same, in all the cases that have fallen under my notice, that it perhaps may be allowable to generalize them into one history, rather than to give a detail of the cases, of all of which, indeed, I have not preserved memoranda.

The patients have usually stated, that, after an attack of severe headach and pains in the limbs, which they have compared with rheumatic pains, accompanied with extreme languor, and loss of strength, which had continued from a fortnight to three weeks, they observed an eruption appearing about the sternum and epigastrium. This eruption has at first been supposed to be the effect of flea-bites, and, in one instance, was believed to be the measles. It gradually extended itself over the trunk, to the legs and arms, and lastly, to the face and scalp. At the same time, a roughness and soreness of the throat began to be felt, and a slight tickling cough ensued. The pains about the shoulders and elbows, and in the legs, sometimes affecting the tibiæ, and sometimes very severely the tendinous portion of the gastrocnemii muscles, continued, and even increased after the eruption had appeared; the appetite became entirely impaired, so that no food was desired, and even the smell of it was loathsome; the languor and loss of muscular strength were such, that the patients were sometimes unable to walk, or even to support themselves, without assistance, in an erect posture. The tongue was furred and clammy; the pulse was considerably accelerated and very feeble; but the functions of the sensorium did not suffer:—a sort of erethism, indeed, rather than actual fever, seemed to be present. The bowels were generally much constipated.

The eruption, which had extended over the whole body in all the cases, at the time when I first visited the patients, consisted of a number of small, circular spots, from one to two lines in diameter, slightly elevated above the surface of the cuticle, but flattened on their own superficies. They were at first of a dusky rose-colour, smooth and shining; but subsequently they became somewhat darker, or of a more purple or chocolate hue; and the surfaces of some of them at length exhibited a slight tendency to desquamation in the centre. This tendency to scale was generally most remarkable in the tubercles affecting the legs, which were somewhat larger than those of the rest of the body: a minute scaly crust was also occasionally formed upon the centre of some of those, which were seated on the forehead, when the eruption was at its acme, or in its decline.

If the fauces were inspected, the tonsils, and sometimes also the uvula, and velum pendulum, were found puffy and inflamed; and on the former, superficial ulcerations generally appeared. The tarsi were also usually affected with inflammation, which was often increased by the occurrence of several of the tubercles along the palpebræ, and a glutinous discharge took place along their edges: occasionally, as might be expected, the tunica conjunctiva was likewise inflamed. The scalp was generally painful and tender when pressed, and

sometimes elevated or thickened here and there, presenting little knots or tumors to the finger.

The cutaneous tubercles were generally most numerous on the inside of the arms, and on the face. They were not painful or sore to the touch, and not accompanied by itching, tingling, or any other disagreeable sensation. However long they continued, they have not shewn any tendency to suppuration, or to ulceration, in the cases which I have seen. When they begun to decline, their colour became less red, inclining to brown, and they gradually subsided, and contracted in circumference, leaving a slight discoloration of the same hue for a short time after the natural texture of the cuticle was restored.

Of the causes of this eruption I can say nothing. I have seen it in two men, and in seven or eight women. In one woman it was supposed to have been received by contagion from her husband; for after he had been affected with it nearly two months, at the end of which time it disappeared in him, she discovered the eruption commencing on herself, and its duration was the same in her. In another woman, a servant, aged 25, who left her place in consequence of the total loss of strength which it produced, it was said to have appeared after she had been immoderately heated by exercise. In this case its whole duration was upwards of three months.

The appearance of this eruption, as well as many of the concomitant circumstances, at once suggest to the observer the probability that it may be of syphilitic origin; and I have seen an eruption very closely resembling it, which was accompanied by that peculiar inflammation of the iris, which has been considered by high authority to be exclusively of syphilitic origin, and in that instance, the eruption was readily cured by a mercurial course. But in the history of the disease in the persons to whom I allude, no trace of any primary venereal symptom was discoverable; in some of them, the occurrence of such a disease, as far as common testimony could be trusted, appeared to be extremely improbable; the eruption in all was so uniform in its character, that one drawing illustrated equally well all the cases that occurred under my observation; the pustular and ulcerative tendency, so invariable in syphilitic eruptions, if left to themselves, never shewed itself; and above all, with the exception of one patient, who died, the eruption of all these persons uniformly disappeared, with its concomitant evils, without the use of mercury in any shape. The fatal case occurred, I believe, in consequence of an absolute neglect both of medicine and nourishment: the extreme debility and languor belonging to the disease rendered the patient herself totally helpless; and I found, when too late, that her aged mother, with whom she lived, was from indolence and feebleness incapable of affording her the necessary as-

sistance. She died in a hospital, to which she was removed. The other patients, as I have stated, all recovered in the space of a month, six weeks, or two months, from the time when they commenced a course of medicine, consisting only of tonics and occasional purgatives. Bark and the mineral acids afforded relief to the symptoms ; but under the use of the decoction of sarsaparilla the amendment was uniform, though slow, and the cure ultimately complete ; the appetite and muscular strength increasing ; the pains and soreness of the flesh diminishing ; the ulceration of the throat healing ; and the erethism of the habit subsiding, in the same proportion as the tubercles became flatter, and as their hue became less deep.

The pains in the limbs, but more especially the inflammation and ulceration of the tonsils, and the tarsal disease, superadded to such an eruption, convey the strongest suspicion of its syphilitic character. But it must be recollected, that there is scarcely any extensive eruption, to which the skin is liable, whether it be acute or chronic, in which the throat and the eyes do not commonly sympathize ; in the scarlatina, small-pox, and measles, such symptoms are sufficiently notorious ; but they are also frequently found with an extensive nettle-rash, with the roseolous and erythematous rashes, accompanying fevers, and even with the common scaly lepra, where that is extensive,

and with almost every other chronic eruption which produces an extended inflammation of the skin.

It would be difficult, if not impracticable, to delineate and describe intelligibly all the varieties of eruptions which assume a character resembling that of syphilitic affections of the skin, but which originate nevertheless from the operation of mercury, or from some cachectic condition or conditions, not yet well understood ; but the more this subject is investigated, the more the number of eruptions, actually found to be syphilitic, will probably be circumscribed. From the mere external character, unconnected with any history of the disease, discrimination is often impossible ; but when the uniformity both of the external character and of the progress and concomitant symptoms, as in the eruption here described, is remarkable, it seems important to endeavour to fix them by the united means of the pen and the pencil. I have no other apology to offer for presenting this brief memoir to the Society.

CASE
OF
BUBONOCELE,
REQUIRING
A SECOND OPERATION

FIVE DAYS AFTER THE FIRST.

By THOMPSON FORSTER, Esq.

SURGEON TO GUY'S HOSPITAL.

Read Feb. 1, 1814.

SOMETIME since I was sent for in the night to a gentleman, who had had the operation of bubonoccele performed upon him five days before. In a fit of coughing, a large quantity of intestine of a deep claret colour burst through the wound in the groin. I found him very weak, with a small, quick and intermitting pulse, with great anxiety, restlessness, and pain in the part. I passed my finger easily through the external ring, but finding the intestine adhering intimately to the space between the external and internal rings, I was obliged to dilate the former still more than it had been done in the first instance, to give me room for separating those adhesions, and for the more easily dividing two membraneous bands, which

strongly girt the intestine. This being accomplished, I came to the internal ring, which was so closely contracted round the intestine as evidently to cause the strangulation. A practitioner, who had assisted the surgeon in the first operation, was with me, and observed that the intestine was then of the same colour as now. Not being able to pass my little finger into this ring, I was obliged to introduce (though with much difficulty) a director, and pressing the intestine as much out of danger as possible, I at last fixed the curved bistoury in the groove of the director, and safely dilated this ring, which presented more resistance to the knife than I ever met with before ; on this, and freeing the intestine from all adhesions, it was easily returned, though some obstruction took place from many of the mesenteric glands being enlarged and inflamed, but the intestine, though much discoloured, was no where sphacelated. The sides of the wound were brought together, and pressure made on it by a large sponge and bandage to prevent any further protrusion. In fourteen days the wound was perfectly healed.

Upon inquiry into the cause and early state of this hernia, the gentleman (who was sixty-three years of age) told me it was occasioned by a slight effort in jumping, when out shooting, about ten years since ; that it was then easily returned, but came down again frequently without any serious inconvenience to him. That about a

after its first descent, he was informed that dangerous symptoms were likely to take place if he continued to neglect the wearing of a truss; he accordingly wore one for some time pretty constantly, but it was frequently so uneasy to him, particularly after much walking, that he usually took it off when at home and alone. He shewed me the truss, which was of a very bad make, not even fitting him tolerably, and consequently making incomplete pressure, even had the intestine been first properly returned before it was applied, which, from his having told me that the part had always a fulness, and was painful when much pressed upon, I am convinced was never the case. This truss therefore never sat easy; for which reason he had latterly laid it aside. Two days before the first operation, in suddenly crossing a street, an unusual quantity of gut came down into the scrotum; various means were used for returning it without effect, and his pain hourly increasing, he submitted on the second day after its descent to have the operation performed; from which time till I saw him, he had no other evacuations than those procured by glysters, which never relieved the pain in his groin.

From this account of the case it seems reasonable to draw the following conclusions, namely, that the improper application and consequent pressure of such a truss upon the unreduced intestine had occasioned the adhesions; that the stricture

on the intestine was not so great as materially to obstruct the passage of the fæces through it, till the protrusion of a large quantity from the second accident caused the strangulation, and rendered the operation necessary, in which the newly protruded intestine was the only portion returned, the former remaining confined by the adhesions already mentioned; and that by the second operation resulting from the third accident (that of a fit of coughing), all adhesions and impediments were removed, and that then only the whole of the ruptured intestine was returned into the abdomen.

Three years ago, I examined a person after death, in whom the operation for the femoral hernia had been performed. I found a loop of sphacelated intestine still closely girt behind the ligamentous aperture. This protruded loop of intestine had been pushed under Poupart's ligament, and left there, under the supposition of its having been returned into the cavity of the abdomen.

ON THE
EFFECTS
OF LARGE DOSES OF OPIUM
IN A CASE OF
DIABETES MELLITUS;

By MR. WM. MONEY,

HOUSE-SURGEON OF THE GENERAL INFIRMARY AT NORTHAMPTON.

COMMUNICATED BY

MR. BRODIE.

Read July 19, 1814.

THE complaint was first noticed by the patient in October, 1813, after living for a few days more freely than usual. An uncommon degree of thirst with an increased flow of urine, having the usual diabetic characters, were the first symptoms observed; to these a gradual failing of the strength, with a corresponding state of emaciation, succeeded, and the patient complained of pain in the region of the kidneys. His appetite was good, but it is not stated to have been particularly voracious. He became a patient in the Northampton Infirmary in January, 1814. He was cupped in the back, and bled in the arm, without any other apparent

benefit than the removal of the pain in the loins; and on the 10th of February, the particular practice, which it is the object of this communication to illustrate, was commenced. He began by taking only one grain of opium at bed-time; but this dose was gradually increased, both in frequency and quantity, till the 1st of March, at which period the quantity of opium consumed in twenty-four hours, amounted to twenty-four grains, which dose he continued to take daily, divided in five or six portions, till the 12th of the same month, when he suddenly left the hospital, his health being considerably improved.

Very little inconvenience was felt from these large doses of opium so long continued. The pulse remained generally between sixty and seventy; he was not particularly lethargic, his appetite continued good, and his bowels were not only moderately open, but he had, about every fourth day, rather a smart spontaneous purging. On the other hand, the advantages derived from the opium were very considerable; the urine was gradually reduced from twenty-five pints in the twenty-four hours to seven; and the thirst was proportionally diminished. Frequent perspirations were induced, and his strength and spirits were gradually improved. Within the last twelve days of his stay in the hospital, the quantity of opium last-mentioned was not farther increased, because there appeared to be no farther abatement of the dia-

betic symptoms; but having taken no opium at all on the last night he slept in the hospital, it was observed that the quantity of urine discharged, had been immediately doubled. In this amended state, he was discharged from the hospital, at his own particular desire, and has not been heard of since*.

During the whole of this treatment, the patient was allowed a full diet, with a moderate portion of meat and milk; but he was put under no restraint, as to vegetable food, of which he had also a regular daily allowance; so that this case exhibits a striking instance of the effects of large doses of opium in diabetes, independently of any other systematic mode of treatment.

* To the paper (of which this is but an abstract,) tables of the daily doses of opium, and of the quantities of drink and urine, with other collateral circumstances, were annexed, exhibiting a detailed view of the above results.

FURTHER OBSERVATIONS
ON THE
DISEASES
WHICH AFFECT THE
SYNOVIAL MEMBRANES OF JOINTS.

By B. C. BRODIE, Esq. F.R.S.

ASSISTANT SURGEON TO ST. GEORGE'S HOSPITAL, &c.

Read July 19, 1814.

I.

DURING the last session I had the honour of presenting to the Society an account of several cases, which appeared to throw light on the pathological history and classification of the diseases of the human joints. In the present paper, I propose to communicate some brief practical observations on the symptoms, by which those diseases, which affect the synovial membranes, are to be distinguished, and on the treatment, which should be adopted for their relief. On the latter subject indeed, what I have to offer may seem to have little or no claim to the merit of novelty. The effects of the various methods of treatment

now employed by physicians and surgeons are for the most part of accidental discovery. The improvement of scientific pathology seldom leads to the invention of new remedies ; but it enables us to understand better the application of those, which are already in use ; to know the particular cases to which particular remedies are suited, and to distinguish the curable diseases, from those, in which a cure cannot be effected.

II. *On the causes and symptoms of inflammation of the Synovial Membrane.*

Inflammation of the synovial membranes may occur as a symptom of a constitutional disease, where the system is affected by rheumatism ; where mercury has been exhibited improperly, or in large quantities, or where there is general debility from any other cause. But in these cases, the inflammation is seldom severe ; it occasions an effusion of fluid into the joint, but rarely terminates in the extravasation of coagulable lymph, or thickening of the inflamed membrane. Sometimes it leaves one joint to attack another, or it suddenly subsides without another joint becoming affected.

At other times the inflammation occurs as a local affection produced by a sprain, the applica-

tion of cold, or arising from no evident cause. It is here for the most part more severe, and of longer duration: it leaves the joint with its functions more or less impaired, and occasionally terminates in its total destruction. In itself it is a serious disease, but it is often confounded, under the general name of white swelling, with other diseases, still more serious. In some cases, it assumes the form of an acute, but in the greater number of instances, it has that of a chronic inflammation*.

In the former, there is pain and tenderness of the joint, and usually redness of the skin. The pain is severe; not referred to a particular spot, but to the whole joint. When the pain has existed for some time, swelling takes place. The period at which the swelling shews itself, varies from a few hours, to two or three days, from the commencement of the attack. The patient usually keeps the limb a little bent, and every attempt to bend or extend it further aggravates the pain.

* It is to be observed, that the boundaries of acute and chronic inflammation in these, and in other cases, are not well defined. These terms accurately enough express the two extremes, but there are intermediate degrees of inflammation of which it is difficult to decide, whether they should be considered as being of the acute or chronic kind. Language can not supply names for all the varieties of morbid action which occur, but the surgeon will learn to distinguish them, and the corresponding varieties of treatment, and it is this nicer discrimination which forms a principal difference between the experienced and inexperienced practitioner.

With these symptoms, there is inflammatory fever. In a few days the disease either subsides altogether, or assumes the chronic form : more frequently it has this form from the beginning.

Where there is chronic inflammation of the synovial membrane, the pain and tenderness are less, so that the patient is able to walk about, and often without experiencing any severe distress. There is no unusual redness of the skin, and little or no fever. The swelling begins soon after the commencement of the attack, but it increases less rapidly than where the inflammation is acute. These symptoms vary in degree at different periods, and generally are aggravated by exposure to cold or any unusual exertion.

In the first instance, the swelling of the joint arises entirely from a preternatural quantity of synovia being collected in its cavity. In the superficial joints, the fluid may be distinctly felt to undulate, when pressure is made alternately by the two hands placed one on each side. When the inflammation has existed for some time, the fluid is less perceptible than before, in consequence of the synovial membrane having become thickened, or from the effusion of lymph on its inner or outer surface; and in many cases, when the disease has been of long standing, although the joint is much swollen, and symptoms of inflammation still exist, the fluid in its cavity is scarcely to be felt. As the swelling consists more of solid substance, so the

natural mobility of the joint is in a greater degree impaired.

The form of the swelling deserves notice. It is not that of the articulating ends of the bones, and therefore it differs from the natural form of the joint. The swelling arises principally from the distended state of the synovial membrane, and hence its figure depends in great measure on the situation of the ligaments and tendons, which resist it in certain directions and allow it to take place in others. Thus, when the knee is affected, the swelling is principally observable on the anterior and lower part of the thigh, under the extensor muscles, where there is only a yielding cellular structure between those muscles and the bone. It is also often considerable in the spaces between the ligament of the patella and the lateral ligaments, the fluid collected in the cavity causing the fatty substance of the joint to protrude in this situation, where the resistance of the external parts is less than elsewhere. In the elbow the swelling is principally observable on the posterior part of the arm, above the olecranon and under the extensor muscles of the fore-arm; and in the ankle it shews itself on each side, in the space between the lateral ligaments and the tendons, which are situated on the anterior part. In like manner in other joints, the figure of the swelling, whether it arises from fluid, alone, or joined with solid substance, depends in great measure on the ligaments

and tendons in the neighbourhood, and on the degree of resistance which they afford, and these circumstances, though apparently trifling, deserve our attention, as they enable us more readily to form our diagnosis.

In the hip and shoulder the disease occurs less frequently than in the superficial joints. The effused fluid can not here be felt to undulate, but the swelling is perceptible through the muscles which cover it. When the hip is affected the pain is usually confined to the hip itself; sometimes it is referred to the knee also, as in cases where the cartilages of the hip are ulcerated. The following circumstances enable us to distinguish the two diseases from each other. In the former the pain is more severe in the first instance than afterwards; and there is swelling of the nates. In the latter the pain is trifling at first; becomes gradually worse, till it is at last exceedingly severe, and the nates are wasted and flattened instead of being swollen.

After the inflammation of the synovial membrane has subsided, the fluid is absorbed, and in some instances the joint regains its natural figure and mobility; but in the majority of cases stiffness and swelling remain. In the superficial joints the swelling has sometimes the form of the articulating ends of the bones, (that is, the natural form of the joint,) and we may suppose it in this case to arise

from the thickened state of the synovial membrane. At other times it has the same peculiar form, which it possessed while the inflammation existed, and while fluid was contained in the joint, and we may suppose that it depends principally on the inner surface of the synovial membrane having a thick lining of coagulable lymph.

The chronic inflammation of the synovial membrane often continues for many months, and after having subsided is very liable to recur from slight causes. Thus a person has this disease in his knee; the inflammation is cured, but tumor and stiffness remain. Whenever he is exposed to cold, or exercises the limb in an unusual degree, and often without any evident reason, the pain returns and the swelling is augmented. Such cases are of frequent occurrence, and they form a large proportion of those which are known by the name of white swelling.

Long continued and neglected inflammation of the synovial membrane occasionally terminates in the formation of an abscess in the cavity of the joint, in ulceration of the cartilages, and in complete destruction of the articulating surfaces. In this last stage, if we wish to know whether the inflammation of the synovial membrane, or the ulceration of the cartilage, has been the primary disease, we must form our judgment, not from the present symptoms, but from the previous history

of the case. It is indeed often difficult to procure a history, on the accuracy of which we can rely, particularly in hospital practice; but this is of less importance, as whatever the disease may have been in its origin, where it has proceeded so far as has been described, there is no difference with respect to the treatment; and in general, no remedy can be employed with any prospect of advantage, except the removal of the limb by amputation.

III. *On the Treatment of the Inflammation of the Synovial Membrane.*

In the acute form of the disease, leeches may be applied to the part; and in most instances it will be right to take blood from the arm. Warm fomentations produce better effects than cold lotions. Attention should be paid to the state of the bowels, and Dover's powder, or some other diaphoretic medicine, may be exhibited. Under this treatment the acute inflammation in general speedily subsides,

The chronic inflammation is relieved more slowly. In the first instance, the joint should be kept in a state of perfect rest. Blood should be taken from the part by means of leeches or cupping, and this may be followed by the application of a blister,

large enough to include the greater part of the circumference of the joint. Under this treatment the pain is relieved, and in a few days the swelling, as far as it depends on the fluid collected in the cavity of the joint, is much diminished. Even where the tumor is solid, arising from the effusion of coagulable lymph, it will in a great degree subside, and sometimes be entirely dispersed, provided the lymph has not yet become organized. A single blister often produces marked good effects, but it is generally necessary to repeat both the blister and the blood-letting several times. The repeated application of blisters is more efficacious than a single blister kept open by the savine cerate, or by other means, for a considerable time. When the inflammation is in a great measure subdued, a moderate degree of exercise of the joint is rather beneficial than otherwise. Liniments, which irritate the skin, may be rubbed on twice or three times in the day. The following liniment is more stimulating than those in common use, and has appeared to me in most instances to have been productive of much better effects with respect to the disease.

Olei Olivæ ʒiss.

AcidiSulphurici ʒfs. M. fiat linimentum.

It may be used of this strength for the class of persons, who apply at an hospital for relief; but for persons of a higher class in society, in whom

the cuticle is thinner, and the cutis more easily irritated, the proportion of the olive oil should be greater. The effect of this liniment is to excite some degree of inflammation of the skin; the cuticle becomes of a brown colour, and separates in thick, broad scales, and the inflammation of the internal parts is relieved, probably on the same principle as by a blister. The friction used in applying the liniment appears to be of service after the inflammation is nearly subdued, but if friction be employed in the first instance the disease is aggravated.

No other remedies seem to be productive of much benefit.

Issues and setons, which are useful in cases of ulceration of the cartilage, are of no service whatever in this disease.

Plasters of gum ammoniac, and others of a similar nature, are of little efficacy, while inflammation still exists; but afterwards they are of use in guarding the joint from the influence of the external cold, and preventing a relapse.

The swelling and stiffness that remain after the inflammation has subsided, if moderate in degree, may be relieved by the free exercise of the limb, and by friction. The mercurial ointment with camphor may be rubbed on the joint; or friction

may be made by the hand with starch or other fine powder. The friction however should be employed with caution, as, when used too freely, it sometimes occasions a return of the inflammation. Whenever there is the slightest indication of this being the case, the friction should be omitted for a time, and leeches should be applied, and if the friction be resumed it should be employed in a less degree, and less frequently than before.

When the swelling and stiffness in consequence of the inflammation are very considerable, I have seldom known much, and I have never known entire relief produced by friction or by any other means. Here too the patient is more liable to a return of the inflammation, and hence friction must be employed with still greater caution than in other cases.

On the whole I have not found so much good produced by friction, as from what I had heard of its effects, I had been led to expect; and I have known it, when used too freely, or too early in the disease, to delay rather than to expedite the cure. Friction appears to be more efficacious where the stiffness of a joint depends on a contracted state of the muscles or tendons of the limb, and on these being glued to each other and to the surrounding parts, than where it is the consequence of disease in the joint itself.

I have in several instances tried the effect of pumping hot water on a stiff joint, as recommended by Le Dran, and as now practised at some watering-places. The blow of a column of water falling from a height of several feet produces considerable friction, with which are combined the relaxing powers of heat and moisture. This practice is certainly productive of benefit; but the observations just made apply to this as well as to the other modes of producing friction.

IV. *On the Symptoms produced in those Cases, in which the Synovial Membrane has undergone a morbid Change of Structure.*

In my former communication respecting the diseases of the joints, I gave an account of several cases, in which the synovial membrane had undergone a peculiar morbid alteration of structure. The observations which I then made have been fully confirmed by many similar cases which have since come under my notice. This disease generally takes place in young persons under, or not much above, the age of puberty. I do not recollect more than one instance of it having occurred after the middle period of life. In general it can be traced to no evident cause; but occasionally it takes place as a consequence of repeated attacks

of inflammation. In this respect it resembles other diseases of the same order. Inflammation of the lungs may produce tubercles, and inflammation of the breast may occasion the growth of a schirrous tumor. Where I have had an opportunity of examining the morbid appearances after amputation, I have always found the whole, or nearly the whole of the synovial membrane affected by the disease; but it is probable, that if the examinations were made at an earlier period, we should always find the morbid change originating in some one point. A patient was admitted into St. George's Hospital in whom this disease was beginning on the inside of the knee: from thence (in the course of three months) it gradually extended itself in every direction over the whole circumference of the joint. In a girl, who laboured under this affection of the knee, but who died in the hospital of another complaint, I found one half of the synovial membrane in a state of disease, and the other half retaining its natural structure and appearance.

In the origin of this disease there is a slight degree of stiffness and tumefaction, without pain, and producing only the most trifling inconvenience. These symptoms gradually increase; at last the joint scarcely admits of the smallest motion, the stiffness being greater than where it is the consequence of simple inflammation. The form of the swelling bears some resemblance to that in cases of inflammation of the synovial mem-

brane, but it is less regular. The swelling is soft and elastic, and gives to the hand a sensation as if it contained fluid. If only one hand be employed in making the examination, the deception may be complete, and the most experienced surgeon may be led to suppose that there is fluid in the joint, when there is none; but if both hands be employed, one on each side, the absence of fluid is distinguished by the want of fluctuation.

The patient experiences little or no pain until abscesses begin to form, and the cartilages ulcerate; and even then the pain is not so severe, as where the ulceration of the cartilages occurs as a primary disease, and the abscesses heal more readily, and discharge a smaller quantity of pus than in cases of this last description. At this period the patient becomes affected with hectic fever; loses his flesh, and gradually sinks, unless the limb be removed by an operation.

The progress of this disease varies in different cases. In general one or two years elapse before it reaches its most advanced stage; but sometimes the period is much longer; and occasionally it becomes indolent, so that it remains during many months without any sensible alteration. In like manner tubercles of the lungs, or schirrus of the breast in some instances remain in an inactive state for several months, or even for some years.

The diagnosis of this disease is seldom difficult. The gradual progress of the enlargement and stiffness of the joint without pain; and the soft elastic swelling without fluctuation, in most instances enable us to distinguish it, not only from inflammation of the synovial membrane, but also from the other morbid affections to which the joints are liable.

V. On the Treatment of Cases, in which the Synovial Membrane has undergone a morbid Alteration of Structure.

Where there is swelling and hardness following inflammation, the substance which has been effused may be absorbed, and the swelling and hardness may disappear, but I know of no instance in which an organ having completely lost its natural structure is capable of having that structure restored. Physicians and surgeons have been employed during successive ages in endeavouring to discover a cure for tubercles of the lungs, and cancer of the breast, and the result of their labours is only to prove that these diseases are incurable. Analogy therefore would not lead us to be sanguine as to the discovery of a remedy for this disease of the synovial membrane, and experience shews that it is equally incurable with other maladies of the same order. By means of rest and cold lotions the progress of the disease may

be somewhat checked, as the suppuration of tuberculated lungs may be retarded by occasional bleeding, and a milder climate; but ultimately the ulceration of the cartilages, the formation of abscesses in the cavity of the joint, and the consequent disturbance of the general health, render the amputation of the limb necessary in order to preserve the patient's life. At this period therefore the surgeon is called upon to recommend, and to urge an operation; but at an earlier period it is a matter of choice with the patient, whether he will live with the incumbrance of an useless limb, till the advanced stage of the disease renders its removal indispensable, or whether he will submit to the loss of it before the absolute necessity for losing it exists.

ON THE
MUSCÆ VOLITANTES
OF
NERVOUS PERSONS.

By JAMES WARE, Esq. F.R.S.

Read July 19, 1814.

NO imperfection of vision is more common than that which is occasioned by the appearance of dark coloured moats before the eyes. These assume various shapes and figures, appear at different distances, and move in different directions, but have no tangible existence in the places where they are seen. Though they do not hinder a distinct perception of the smallest objects, the sight is often much incommoded by them ; and the mind is agitated by the apprehension that they are certain precursors of the loss of sight. In the following paper, I propose to give an account of this affection, as it appeared in three different persons ; after which I shall offer a few remarks on their proximate cause, their probable termination, and the means that have been employed to accomplish their removal.

CASE I.

Mrs. L. was first molested by these appearances in the year 1786, being then about thirty years of age. When she awoke in the morning, some minutes elapsed before she could see any thing distinctly; and then a great number of small yellow moats appeared to dance before every object to which she directed her eyes. At the time I was consulted, the moats had increased considerably in size, though their magnitude depended much on the distance at which they were observed; being larger when seen far off, and smaller when near the eyes. Besides these yellow sparks, if the eyes were exposed to a strong light, the air appeared full of small particles resembling globules of quicksilver in continual motion; among which were three or four darker coloured than the rest, which appeared as large as small peas, and seemed to turn round on their axes. When the eyes were exposed to a strong light, she perceived several long irregular figures, some of which seemed to be composed of these globules twisted together, and others were like the flue that is swept from bed-rooms. These figures appeared to rise when she lifted her eyes up, and to fall when she turned them down, and they never continued long in one position. If she looked at the sky for two or three minutes, and then turned from it, her eyes flashed fire for the same space of time; and if she looked at the

sun, though but for a moment, she seemed to see four or five suns, which appeared at first like balls of fire, but soon turned green, and still continued visible, though she shut her eyes, and applied her hands before them. All the impressions which a strong light made on the eyes continued for some time after the light was excluded, except the dark coloured specks, one only of which was perceived when the eyelids were closed, and this also disappeared, if the hand was placed before it.

When the preceding description was given me, both eyes were supposed to be affected in the same way; but on a closer inquiry, it was found that the right eye only perceived the moats; the left eye being scarcely affected by them.

This lady had been much afflicted, shortly before I saw her, by the death of her husband; her legs and arms trembled, and her heart beat violently. She was much troubled with flatulency, and had a dull heavy pain in the back of her head; which pain sometimes extended to the forehead and sockets of the eyes. She had a strong beating in her temples, with a noise in her ears; and was in general remarkably irritable. Her bowels were in good order, and all the usual evacuations regular as to time and quantity.

On examining the eyes, the pupils appeared perfectly clear; they dilated and contracted freely, on

every diminution or increase of light, and the patient distinguished with facility, and with either eye, the smallest characters. Under these circumstances, I did not hesitate to deliver my opinion, that there was not any danger to the sight in the symptom that had so much alarmed her; and my advice was to aim at strengthening the constitution, and particularly the nervous system, by giving two or three times in the day small doses of the volatile tincture of valerian, mixed with an equal quantity of tincture of castor, and joined occasionally with the camphor mixture or infusion of cascarilla. I directed warm water, or a warm infusion of rosemary, to be applied to the eyes and forehead, whenever they felt heavy and uncomfortable; and that the forehead, temples, and outside of the eyelids, should be embrocated morning and evening with a camphorated rosemary spirit. I also recommended a change of residence, with such occupations and amusements, as were most likely, without occasioning fatigue, to withdraw the mind from the reflections which had been the source of anxiety and distress. This advice was pursued for a considerable length of time; the moats soon becoming less troublesome, and the mind being relieved from the dread of blindness, which had previously occasioned extreme anxiety.

In the year 1813, that is, twenty-five years after I had been first consulted in this case, I again saw the patient. She then enjoyed good health

and spirits. The moats were still occasionally perceived; but they had become so faint, that she could only see them in a strong light, and when she took pains to look for them. It ought, however, to be mentioned, that at this time her daughter was just married; whereas, when she first consulted me, she had lately lost her husband.

CASE II.

In the year 1801, I was consulted by the brother of a nobleman, about thirty-one years of age, on account, as he described it, of a considerable number of intersecting moats or beams which floated continually before both his eyes, but particularly before the right. Sometimes they appeared nearly spherical, sometimes like long knotted lines, and sometimes like a series of spherical knots, varying in number, magnitude, and opacity. Sometimes they seemed to have an undulatory motion, and one of them in the right eye was always larger than the rest. They were perceived when the eyelids were closed, almost as strongly as when they were open. When the eyes were directed to an object beyond the usual distance of distinct vision, this object appeared as if it was seen through a pane of glass sprinkled with water. The right eye had been less vigorous than the left for ten years. He had never suffered from headach or pain in the eyes; but when the present morbid sensations began, he had had a violent heat in them,

without inflammation, and the heat was followed by a great languor. It had been suspected at one time, that an insect had insinuated itself under the right upper eyelid, and much pains were taken to extract it, but of course without success. He had lived three years in a tropical climate, had made free use of mercury, had had much mental agitation, and frequent feverish dreams. He had never been intemperate, and was usually abstemious in his diet. His temper was naturally even; his spirits vigorous; and he had very rarely been subject to hypochondriacism or melancholy. On examining the eyes they appeared perfect; the pupils were clear, and of their proper size; and they dilated and contracted regularly in different degrees of light. He was near-sighted, though this did not appear by any unusual convexity of the cornea, and the near-sightedness was obviated by the use of a concave glass.

After a careful consideration of the preceding history, I assured the gentleman that his sight was not endangered by any of the symptoms that he described; and the advice I gave was very similar to that which had been given in the preceding case; viz. that he should endeavour to strengthen the constitution, particularly the nervous system; and abstain as much as possible from every thing likely to agitate the spirits.

Twelve years afterwards, I had occasion to see

this gentleman again, when he informed me that he retained the perfect sight of both eyes, and could distinguish the most minute objects with either of them. In a bright light, however, he still perceived the moats as before, if he took pains to look for them, but he was now so much accustomed to their appearance, that they did not occasion any uneasiness. He continued near-sighted, and made use of a concave glass, denominated No. 4. to distinguish objects at a distance.

CASE III.

About ten years ago, a lady consulted me, in great distress of mind on account of the recent appearance of several dark coloured moats before her eyes. These had no external existence, but assumed fixed figures: that before the right eye was nearly the eighth of an inch wide, and three inches long: its sides were bounded by wavy lines; and its length was interrupted by many apparent knots, being bent near its middle so as to form an obtuse angle: whilst that before the left eye was quite straight, of the same width with the other, about two inches long, and was continued obliquely downward from the right to the left. These appearances were most plainly perceived when she went from one bright light to another, the intermediate space being dark; as for instance, when she removed from looking through one window in a room to look through another.

When the moats were first noticed, they were only seen in a bright light, but after a short time they were also perceived in the shade, becoming, however, much plainer and more numerous when the light was strong. When the lids were shut, a great number of dark coloured spots were seen before both eyes, but they were not united to form lines until the lids were opened. She had not had pain in the eyes, but her head felt heavy, and was often giddy. Her spirits were easily agitated, and she had continually a rumbling noise in her ears. When she looked from a room into the street, objects appeared larger than natural, and she was obliged to contract her eyelids to bring them to their proper size, distant objects always appearing hazy and confused. The eyes were free from inflammation, and the pupils perfectly clear, dilating and contracting with great readiness in different degrees of light. On looking through a concave glass, the undue magnitude and haziness of distant objects immediately ceased, and she beheld them of their natural size and clearness. The imaginary knots and lines continued to molest her notwithstanding the use of the glass, but they were not then so strongly marked. On considering all these circumstances, I thought myself justified in assuring the patient that there was not any danger in the symptoms she had described; and after giving her a medicine to clear the bowels, I advised her to take a dram of the volatile tincture of valerian, in a cupful of the camphor mixture

two or three times in the day, and to bathe her temples and forehead, and the outside of the eyelids, morning and evening, with a camphorated rosemary spirit. After this time I did not hear from her professionally during many years; but was occasionally informed that the moats had not wholly disappeared, though they were become so faint, and so little interfered with vision, that she, in a great degree, had lost her anxiety about them. Two years ago I was again consulted on account of a recent discovery that she was unable to read with the left eye: on examining it I found the pupil perfectly clear and retaining its full power of dilating and contracting; but I took notice that when an attempt was made to read, the book was held at a considerable and unusual distance. This was the more remarkable as the eye had previously been near-sighted. It was now, however, evidently become presbyopic, and on holding a convex glass of thirty-six inches focus before it, the confusion was removed, and the smallest characters were read without difficulty. Notwithstanding this sudden change in the sight of the left eye, the right eye continued myopic, and required a concave glass to enable it to see distant objects. I again assured the patient that there was not the smallest danger in this new symptom; but as she was far advanced in pregnancy and naturally of a full habit, I advised that she should lose ten ounces of blood from her arm, and that she should take a few cooling medicines, joining with them some volatile

drops whenever her spirits were much depressed. By this treatment the presbyopic sight of the left eye was in a short time removed, and I have just heard from her family physician that the left eye has now no other defect than that which arises from the *muscæ volitantes*, which are only occasionally seen, and do not injure vision; and the right eye is rather less near-sighted than it was when I was last consulted.

The three cases of *muscæ volitantes*, which have been now described, may be considered as examples of a considerable number of the same kind, which, I do not doubt, have fallen under the observation of many gentlemen in this society. It is not easy to ascertain the proximate cause of these moats; but from the constancy in their figure, and their frequently long continuance, it seems probable that they depend on a steady pressure on one or more minute points of the retina, which are situated near the axis of vision, but not exactly in it. The pressure must be near this axis, because the moats always appear near the objects that are looked at; but it cannot be in the axis, because the moats do not injure or impair their natural appearance. As the pressure is not in the axis, the outline of the moats is always somewhat obscure; and the exertion that is made to bring the moats into the axis by moving the eye, gives them an ap-

parent motion, which is sometimes upward and downward, and sometimes from side to side*. That the tunica retina is liable to be affected by this partial pressure, may be fairly inferred from an examination of the structure of this tunic, in connection with that of the parts which are contiguous to it. The retina in a recent human eye has the appearance of a plain uniform transparent pulpy membrane, which surrounds the vitreous humour but is unconnected with it. On a close examination it is discovered to be composed of two substances. One of these is an exquisitely thin membrane, on the inner side of which, in the foetal subject, many blood-vessels may be traced; and on the outer, a medulla is spread, which lies in contact with the inner concave surface of the tu-

* The sudden and irregular change which occasionally takes place both in the figure and position of the muscæ volitantes, may be supposed to militate against the opinion I have here advanced, that they are occasioned by a morbid pressure on some fixed points of the retina. This changeableness in their appearance has induced some to suppose that they are produced by opaque particles floating in the aqueous humour. Many objections, however, may be made to this supposition. But I shall only here mention that small specks on the cornea do not occasion these appearances; and a case still more applicable to my purpose came under my notice a short time ago, in which, after the removal of a cataract, a white opaque particle, about the size of the head of a small pin, moved continually upward and downward near the centre of the pupil; but though very perceptible to observers, it was wholly unperceived by the patient, and neither interfered with vision nor occasioned the smallest appearance of a musca volitans.

nica choroides. This concave surface of the choroides when well injected, has been said by Tina * to have a villous appearance, produced by innumerable short flocculi, which are exquisitely minute; and, indeed, they are imperceptible to the naked eye. They are covered by a black mucous substance, called pigmentum nigrum, which is so equally spread over the retina, that when the person is in health, it only serves to render the retina duly susceptible of the impressions made upon it by the light transmitted from external objects. When, however, a morbid sensibility is excited, like that which general debility or much anxiety is apt to occasion, the retina, (which has a larger quantity of nervous medulla spread over it, in proportion to its dimensions, than any other part of the body) becomes morbidly impressed by any little points or projections that happen to be in contact with it. This morbid impression may be occasioned either by the pressure of small portions of lymph diffused irregularly between the choroid coat and retina; by some minute particle of the pigmentum nigrum, larger or more uneven than the rest, or by one or more of the minute villi of the choroides itself: and such a pressure, however it be occasioned, is sufficient, in my apprehension, to produce the image of an object,

* Si lente faciem concavam choroidis examinemus apparet illam ubique obduci villositate quâdam quæ undique emittit flocculos innumerabiles in aqua fluitantes, et brevissimè eminentes.

Tina's Descriptio anatomica oculi humani, cap. ii. sect. vi.

similar in every respect to that of a real object, so situated that light proceeding from it would have produced a similar impression upon the retina. The imaginary object is seen in a right line continued from the point, where the impression is made on the retina, through the centre of the eye, conformably to a known law in optics; and the distance at which it is seen from the eye is that at which objects of a similar size are in general most distinctly perceived. The difference between the structure of the retina and choroides, when capable of producing these morbid sensations, and that of these parts when in perfect health, is however exquisitely minute; and the morbid impressions made on the retina are so much out of the line of the axis of the eye, that the imaginary moats they occasion do not interfere with the sight of external objects; these moats being in general so faint and undefined that they can only be perceived when the light is strong, and the attention is directed particularly to them.

It is difficult to ascertain the size of the particles that is sufficient to *stimulate* the retina, so as to produce the perception of these moats; but when the minute size of the image which visible objects make on the retina is considered: for instance, that a line of the length of a quarter of an inch, viewed at the distance of eighteen inches from the eye, makes an impression on the retina, no longer than the 144th part of an inch, some notion may

hence be formed of the size of a particle, which, by morbidly acting on the retina, shall cause the appearance of a moat, which sometimes is no larger than a pin's head, when imagined at the above-mentioned distance from it*.

It has been commonly supposed that these moats are certain symptoms either of an incipient cataract, or an incipient gutta serena; and their occasional appearance in company with these disorders, has tended to confirm this distressing apprehension. It is hoped that the description of the cases that has been given in the beginning of this paper, together with that of the most probable immediate cause of the moats, may contribute to remove this erroneous opinion; and the observations that have been offered will be strengthened by attending to the following brief description of the cataract and gutta serena, and the manner in which these disorders affect the sight.

Though the opacity of the crystalline humour,

* The magnitude of the picture made by an external object on the retina, may be determined by considering the angle that is formed by two right lines drawn from the two extremes of the object to the centre of the eye, (which angle is commonly called the optic or visual angle,) and continuing these lines beyond the centre until they reach the retina, which, in the human eye, is a distance of half an inch. The size of the image impressed on the retina bears the same proportion to half an inch, that the size of the external object bears to its distance from the centre of the eye.

which constitutes a cataract, is sometimes formed rapidly; this is a rare occurrence, the disorder in general being slow in its progress. It is first discovered by a sense of confusion in the appearance of small objects. These, after a little time, are seen through a mist. As the mist increases, objects become more and more confused, until at length the power is lost of distinguishing even their outline; and afterwards of seeing any thing more than the difference between light and darkness. The mist, however, in these cases, is always extended universally, and does not appear in detached points; and in the same degree of light it increases progressively, until the distinctness of vision is destroyed by it. In the commencement of the disorder the thickness of the mist is not so great when the light is weak as when it is strong, in consequence of the pupils being dilated in a weak light, by which dilatation the circumference of the crystalline, which is always somewhat less opaque than the centre, is more open to the passage of the light through it. I have taken pains to learn whether persons who are deprived of their sight by cataracts perceive these *muscæ volitantes*; and, after an inquiry of no small extent, I think myself justified in asserting, that if the opacity of the crystalline humour has not been preceded by internal inflammation of the eye, or by great nervous debility, these moats are very rarely perceived. It must not be forgotten, however, that the opacity of the crystalline is sometimes accompanied with

an opacity of the capsule that contains it. Such a complication is very frequent when infants are born with this disorder ; but it seldom takes place in an after period of life without being preceded by an inflammation in the internal parts of the eye ; and this inflammation is fully sufficient to occasion such an alteration in the structure of the choroides, as may, by making more or less of unequal pressure on the retina, excite the sensation of the moats which have been above described. In these instances, no less than in those which have been preceded by nervous debility, the moats are most strongly perceived when the light is strong ; and it is not unworthy a remark, that in cases where the sense of sight is wholly extinguished, the imaginary appearance of moats ceases with it.

The gutta serena is not always complete any more than the cataract. When complete the pupil is in general much dilated, though this may be hindered by different circumstances, particularly by the adhesion of the posterior part of the iris to the capsule of the crystalline humour. Such an adhesion is not unfrequent when the internal parts of the eye have been inflamed. But whether the pupil in this disorder be dilated or contracted, its size is always unchangeably fixed, both in a weak and strong light ; and this forms the characteristic difference between the gutta serena, which is so alarming, and too often so destructive to the sight, and that comparatively harmless affection of the

eye which occasions the *muscæ volitantes*. However numerous these moats may be, and however distressing to the persons who behold them, if the power of the pupil to dilate and contract in different degrees of light remain perfect, and if the eye be able to distinguish minute characters as accurately as it did before the moats were perceived, it may be safely inferred, not only that the optic nerve retains its due degree of sensibility, but that the *tunica choroides* also is uninjured; since the iris, the membrane in which the aperture of the pupil is situated, is a continuation of the *choroides*; and therefore the pupil cannot be freely acted upon if the *choroides* be in a state of disease, or if the connection between the retina and *choroides* be not perfect.

From the observations that have been now made it follows, that whenever the appearance of *muscæ volitantes* is unaccompanied with the sensation of a mist, which more or less obscures the appearance of objects, the conclusion may be safely drawn, that it is not a symptom of a cataract; and whenever their appearance is not accompanied with a fixed state of the pupil, it may as safely be inferred that it is not a symptom of the *gutta serena*.

In making this remark, however, I do not mean that the appearance of these moats is not occasionally observed by persons who have an incipient *gutta serena*, as well as by those who have an inci-

piant cataract ; but in such cases other symptoms denoting these different disorders are always present with them.

It has by some been supposed that the muscæ volitantes are induced by too great a determination of blood to the vessels of the eyes ; and, under the influence of this opinion, powerfully evacuating remedies have occasionally been employed for the purpose of removing them. But, though it cannot be denied that a plethoric state of the system is capable of occasioning these appearances, it is a fact, that very few instances have come under my notice in which a debilitating treatment has afforded any kind of assistance ; and, on the contrary, many cases have occurred in which the strength and number of the moats have appeared to be much increased by it.

The more common exciting cause of these moats, appears to me to be too close application of the mind to objects that occasion anxiety or distress ; and on this account, I think it highly important to relieve the mind, as far as is possible, from intense application of every kind, and to encourage it, not only by an assurance of the absence of all danger to the sight from this symptom, when it is independent of others ; but of the high probability that the moats will become less and less troublesome, in proportion as the strength and spirits can be recruited. The modes by which

this object may be attained must vary in different cases. If the eyes have been weakened and are become uneasy by the frequent discharge of tears, it will be useful to foment them two or three times in the day with hot water, or a hot infusion of camomile flowers, or of the herb eyebright, and afterwards to embrocate the forehead, temples, and outside of the eyelids with camphorated spirits, eau de Cologne, Hungary water, or some similar application. Small doses of the volatile tincture of valerian, or of the spiritus ammoniæ compositus, given in two or three table-spoonfuls of the camphor mixture are also often beneficial. Previous, however, to the use of volatile remedies it is always necessary to attend to the state of the bowels and of the biliary organs. These are often sluggish in their action; and the secretion of bile is sometimes very defective. In such cases a brisk dose of calomel, or some similar purgative medicine, may afford great assistance; means, however, being always taken, during the action of such medicines, to hinder the general system from being debilitated by them.

Before I conclude, I beg leave to relate a case which has been given to me by an intelligent medical friend. It appears, as he justly observes, to be an instance of *suffusio scintillans*, as it has been described by Sauvage; and in this instance it was evidently connected with a morbid state of the stomach and biliary secretions.

CASE IV.

“ About ten years ago*, when about forty-eight years of age, I experienced the first attack of the malady which I mean to describe; and it has repeatedly returned at irregular periods, from that to the present time. The first notice that I have of the attack is a peculiar undescribable sensation at the bottom of the eye, which does not amount to pain, and is so slight that its reality is not to be determined, unless I direct my attention very particularly to it. After a few seconds the objects, in a small point, nearly in the centre of the field of vision, become indistinct; and, shortly afterwards, invisible; there being then no difference between this point and the other parts of the field of vision; these changes taking place in every direction in which the eyes are moved. In a few seconds more, that is, in about half a minute from the commencement of the attack, the point that was invisible becomes lucid, appearing to be a circular spot, about the eighth of an inch in diameter; in which a yellow flame seems to undulate from the centre to the circumference with almost coruscating quickness and splendor. This spot increases by the extension of the undulating flame until it acquires an apparent diameter of about three quarters of an inch, which takes place generally in

* This account was given in the year 1813.

about six or eight minutes. The fiery veil, which conceals objects, becomes then thinner in the centre, and objects are there seen through it. The vision increases until at length a ring of light only remains, which continues to enlarge until it is lost by seeming to extend beyond the field of vision.

“ The returns of the attack have been very irregular. Sometimes they have occurred daily for a week or ten days together ; at other times more than a month has elapsed between their appearance. During one forenoon they returned almost every half hour ; but of late the intervals are much lengthened ; and I have been now exempted from the malady more than three months.

“ At first no pain was felt ; but during the last twelve months, a slight uneasiness under the forehead, on the opposite side to that of the affected eye, has generally accompanied and succeeded the attack.

“ The disease is common to both eyes, though it has never yet occurred in both at the same time. My sight is not injured, though the sensibility of the retina appears to be morbidly increased : a strongly illuminated object producing a more brilliant spectrum than it used to do.

“ About six weeks ago I first saw the unpleasing appearance of a small dark circular spot, which,

varying its situation with every motion of the eye, shewed how appropriately the term *musca volitans* had been applied to it. The possibility of its being a partial paralytic affection, resulting from the frequent morbidly increased action of the retina, naturally alarmed me ; but six weeks having elapsed without any return, I am become easy concerning it. In this instance the immediate cause of the affection appears to have been an irregularly increased action of the retina ; and the remote causes were an over eager exercise of the mind, joined with too long continued employment of the eyes, and a disordered state of the stomach and bowels.

“ With regard to the means of cure, reprehensible as it may appear, I for a long time employed none. About three years ago, however, having been harassed repeatedly at short intervals, and sometimes two or three times in the day, by the above-mentioned appearances, I called on you, and, by your advice, took a dose of five grains of calomel. After this the spectrum did not appear for several months, and when I again saw it, it yielded to a repetition of the same remedy. In the following year, having travelled two days together, and taken food of an improper kind, and in an irregular manner, the attacks on the third morning were so frequently repeated, that I was unable to see my way without difficulty and danger. I therefore stopped and took my dose of calomel ; after which the spectrum immediately disappeared, and

it did not return for many months. That which was black, as well as those which were lucid, were equally removed by the use of this medicine ; and I have not now perceived either of them for a considerable length of time."

ON THE
TREATMENT
OF
ERYSIPELAS,
BY
INCISION.

By A. C. HUTCHINSON, M.D.

SURGEON TO THE ROYAL HOSPITAL AT DEAL.

COMMUNICATED IN A LETTER TO

SIR GILBERT BLANE, BART.

Read July 19, 1814.

DEAR SIR,

DURING your services as Physician to the Fleet, and subsequently as Commissioner for sick and wounded seamen, the opportunities afforded you of examining the medical records of the navy were such, that the frequently fatal termination of erysipelas, on ship-board, cannot but have attracted your notice. This consideration has induced me to communicate to you a more successful mode of treating that disease than has hitherto been practised; and which I feel myself particularly called upon for by the remarks of an ingenious writer in a periodical journal, whose testimony in favour of

this treatment, first practised by me, is expressed in terms so strong, that I should conceive it an injustice to the profession to withhold any longer the result of my experience and observations on so interesting a subject*.

During the last six years that the surgical department of this hospital has been under my superintendence, I find, on a reference to the hospital books, and my own notes, that no fewer than forty-one cases of erysipelas have been admitted; and with three or four exceptions, it has, according to my judgment, been that species of the disease styled by nosologists, Erysipelas Phlegmonoides.

In all the cases above alluded to, the disease was confined to the upper or lower extremities, chiefly the latter; and, among seamen, I have never seen it on the face, excepting in two slight instances, from wounds on the head, where the bone or its investing membrane had been injured.

The lower extremities being the parts generally attacked by this disease, among seamen, may, in some degree, be attributed to their legs and trowsers being more frequently immersed in salt water, than other parts of the body; and the constant irrita-

* See the New Medical and Physical Journal for March, 1814, page 197,8.

tion produced by the friction of such coarse open dress upon the naked skin until such time as it has become dry.

Erysipelas phlegmonoides is so alarming a disorder among the description of men who become my patients, both from the intemperate lives they lead, and the frequent and sudden changes of climate to which they are necessarily exposed, that if active measures to arrest its destructive ravages be not pursued in the first instance, gangrene and sphacelus of the integuments, or of the whole limb, will, not unfrequently, deprive the patient, within a very few days, either of a limb or of his life.

If, however, gangrene should not take place, we have invariably found the disease to terminate in effusion or suppuration between the integuments and muscles. These secretions, from being so situated, break down the cellular and vascular connections between those substances, to a greater or less extent, according to the height the disorder has attained; so that immense bags of matter are sometimes formed under the integuments, which may be moved, not only all round the limb by changing its position, but, as I have often witnessed, from the ankle to the trochanter and over the glūtici muscles.

The integuments, thus deprived of their nourish-

ment through the blood-vessels from the subjacent parts, the vitality of considerable portions of this substance must inevitably cease; and the muscles will be left without a covering, to the extent sometimes of the greater part of the leg and thigh; and in such cases, if immediate recourse be not had to the amputation of the limb, the patient will sink under the discharge from so great an extent of suppurating surface.

Notwithstanding incisions have been made in different parts *after* effusion or suppuration had taken place, with the view of liberating the contained fluid, and every means subsequently used by local applications and by bandaging, to promote union between the detached surfaces, I have but seldom succeeded, and then only where the parts insulated were not extensive.

“ It not unfrequently happens,” says a late and highly respectable writer, “ that in cases of erysipelas phlegmonoides the cellular texture which enters between, and connects together different parts, such as muscles, tendons, nerves, blood-vessels, &c. becomes dead, by which the continuity of these parts is destroyed. In these cases extensive portions of the skin are usually removed, partly by gangrene, and partly by ulceration; and we see muscle, tendon, blood-vessel and nerve denuded of their proper coverings, and existing in different states of disease.” The same author says, a few

lines farther, " I have, in various instances of erysipelas phlegmonoides, seen several inches of the femoral artery laid completely bare by the gangrene, ulceration and sphacelus of the parts covering it," &c. *

In conjunction with the usual medical treatment in such cases, local bleeding, by means of cupping followed by fomentations, was the plan I pursued in the first few cases that came under my care; and, in the very incipient stage of the disease, this may be all that is required to effect a cure by resolution; but if the disorder should advance to supuration, insulation of the integuments, as has been before stated, will not unfrequently be the consequence.

From this period I have practised the plan of making several free incisions with a scalpel, on the inflamed surface, in a longitudinal direction, through the integuments and down to the muscles, as early in the disease as possible, and before any secretions had taken place. These incisions may be about an inch and half in length, two or three inches apart, and vary in number from six to eighteen, according to the extent of surface the disease is found to occupy.

These incisions will not only yield the operator

* See Dr. Thomson's Lectures on Inflammation, p. 512, 13.

between fifteen and twenty ounces of blood from the vessels most actively engaged in feeding the disease, but they will give considerable relief to a tense and over-distended skin ; which is clearly evinced by the great retraction that takes place between the lips of the incised wounds, immediately after the instrument is withdrawn ; and further, they form ready channels through which any fluid may pass as soon as secreted ; and thus the formation of bags of matter, and the insulation of the integuments will be effectually prevented.

Fomentations generally succeed this operation, alternated, sometimes, with cold saturnine lotions, until a reduction of all the unfavourable symptoms, which we have invariably found to take place within twenty-four hours.

In making these incisions I would recommend that care be taken not to cut in the direction of a principal artery uncovered by a muscle or a tendon, which might afterwards impede its actions ; nor in the course of the principal lymphatic vessels, as troublesome swellings of the limb below would, it is probable, be the consequence of their division.

The medical treatment in these cases has been confined to the keeping the bowels free, and an endeavour to make the skin perspirable, by the exhibition of antimonial or other medicines, and

occasionally, where the constitutional irritation has been great, an opiate at bed-time.

The cinchona, as recommended by Drs. Fordyce and Wells, I have never used in this species of the disease until the fever and inflammation had been subdued by the means above stated; but in the only two cases of erysipelas erratica, that came under my care, its exhibition was attended by the most salutary effects. These two last-mentioned patients were, at their admission into the hospital, extremely emaciated, old and worn out in the sea service.

Whether erysipelas be contagious, as has been supposed by some writers, I am not prepared to say, but I have remarked that more cases than one have generally been received into the hospital from the same ship, provided the vessel have remained any time in the Downs, after the first case was landed; and I have met with one instance where the disease has attacked another patient in the same ward in which such cases were placed, and who had ever before been exempt from that disorder.

Instances of a recurrence of this disease are very common in all situations where I have seen it, but especially so, if a recent case were placed in the same ward where there may happen to have been others convalescent from it, and we have observed

that the recurrence of the disease, in such cases, has been early or late in proportion to the proximity of the convalescents to the recent case admitted.

From my own experience, therefore, and the reports made to me by every surgeon of the fleet, to whom these practical facts had been communicated, I have no hesitation in recommending the treatment of erysipelas phlegmonoides by incision to your notice and serious consideration; as I am thoroughly convinced that if the plan of treatment, suggested in these brief remarks, were more generally known and adopted, the fatal termination of the disease would be less frequent, and the after consequences of extensive sloughing of the integuments, &c. wholly prevented.

For the last five years that the treatment has been adopted at this establishment, I have never lost a case; nor was the recovery of the patients to perfect health, and the free exercise of their limbs protracted beyond a very limited period. It may be worthy of remark, also, that the incisions healed kindly and invariably without any disposition to slough.

I would wish it to be understood, however, that these practical remarks apply only to the disease as it has come under my observation, seated on the extremities; although it is but reasonable to as-

sume, from analogy, that the practice would be attended with equally beneficial effects, were the disease seated on any other part of the body ; but we should be guarded how we disfigured the face by such incisions.

I have the honor to be,

Dear Sir,

Your obliged and very humble servant,

A. C. HUTCHINSON.

CASE
OF
OBSTRUCTED AORTA.

By ROBERT GRAHAM, M.D.

ONE OF THE PHYSICIANS TO THE ROYAL INFIRMARY, GLASGOW.

COMMUNICATED BY

SIR GILBERT BLANE, BART.

Read July 19, 1813.

THE case which I take the liberty of transmitting to the Medical and Chirurgical Society, has, as far as I know, but one parallel on record, and in it the appearances on dissection only are mentioned. No history is given of the case. I believe I have extracted from the books of the Infirmary, such parts of the reports taken at the patient's bedside as are of any importance, and have even noted some anomalous symptoms which may appear trifling, because it may perhaps be found that an improved state of knowledge may give importance to what at present seems adventitious and without value. I am sorry to say, that as I can see no diagnostic symptom, the occurrence of this derangement adds but another chance to our guessing wrong during life at the diseases of the heart.

Henry Frere, fourteen years of age, a weaver, admitted into the Infirmary, 3rd August 1813, when the following history of his symptoms was entered on the journal of the house.

“ Two weeks ago, after exposure to cold, was affected with dry cough, which for the last eight days has been attended with pretty copious expectoration, and pain impeding respiration, and excited by the cough in the left side of the chest, p. 100, pretty firm. Little appetite. Much thirst. Tongue rather white. Bowels regular. Sleeps ill. Sweats a good deal. Has used no medicines.”

The disease was looked upon as a case of pneumonia, but of such standing that suppuration seemed to have taken place, and in which therefore no material benefit was likely to result from any treatment. However, under the ordinary means, bleeding, blistering, expectorants, and the free use of cathartics, I had the satisfaction of seeing the symptoms decline. The blood from the first bleeding was somewhat buffy. The pulse, however, generally ranged from ninety-two to one hundred and four, and is variously marked in the reports, full, strong, sharp: it was always regular. The *sputum* became more copious, gross, and tinged with blood. He perspired chiefly on the upper parts of the body, moaned in his sleep, took little food. On the 8th, he was affected with nausea and vomiting. On the 19th, he had a febrile at-

tack, which lasted a few days. On the 20th there was much pain in the left eyeball. On the 27th he complained only of palpitation, the first time that symptom is noticed in the journal, though I rather think this was an oversight. No report was taken from this date till the 6th of October, when he was dismissed from the hospital, "cured."

The palpitation had subsided as the strength increased, which encouraged a hope I was willing to entertain, that that symptom proceeded from weakness, though I could not but express fears that the inflammation had extended to the pericardium or heart. The uncertainty of the *diagnosis* in cases of this kind, is but too well known to every practitioner. I was inclined to suspect the effusion of serum within the pericardium, or perhaps adhesion of the heart to its capsule, though I had seen at least two cases about that time of the most intimate and general adhesion, without the circulation having been in any degree affected.

These fears were much strengthened by the boy's appearance on returning to the hospital, on the 13th November, when the throbbing of the carotid and subclavian arteries was very remarkable. On his readmission, the following report appears on the journal :

" 13th November, dyspnœa, palpitation at the heart, and pain in the left side of the thorax re-

turned soon after he left the house, and have been gradually increasing. P. 88, regular. Appetite pretty good. Considerable thirst. Bowels kept open by physic. Received temporary relief from the application of a blister."

Blisters and cathartics were again employed, and the symptoms for a time declined. The pain which had been removed, returned to the left side of the chest, on the evening of the 29th. A blister was repeated next day which gave much pain, till he was suddenly seized with a febrile attack on the 2d December, when the pain became quite easy. There was no strangury. The fever was gone next day. A similar attack, accompanied with nausea and vomiting, was experienced on the 12th, and immediately removed by the operation of an emetic. He had acidity at stomach and cardialgia after meals. On the 23d he is reported as having been affected for ten days with pain in the right side of the chest, increased by motion, and by full inspiration; and by frequent cough, most troublesome in the night. The pulse had again risen. He was blistered, used cathartics, and was twice bled, the blood, especially after the first operation, being very buffy. The pulse came down, and the pain was removed, but the cough and palpitation continued. The circulation was again quickened on the 27th, and remained hurried till his death: he sunk in strength; was drenched in perspiration; took no food; was at-

tacked with frequent vomiting; the urine became scanty; his sleep was disturbed; the dyspnoea and palpitation increased; and he expired about noon on the 2d of January. The pulse, while he was last in the hospital, fluctuated from ninety to one hundred and sixteen, and was of various degrees of strength and firmness; latterly only, weak: it was always regular.

Dissection.

There was nearly a pound of serum in the cavity of the abdomen, and the bowels were distended with flatus, but the viscera seemed natural. Immediately on turning up the sternum, the pericardium presented itself, very much enlarged, obscuring the left lung, and adhering to the *pleura costalis*. This capsule, which was thin and beautifully transparent, contained about an ounce of fluid, and a heart nearly twice the natural size, for a boy of this subject's age. The arteries and trachea were divided above the arch of the aorta, the contents of the thorax torn downwards, and the aorta being divided below, the whole was removed from the body. The walls of the left ventricle were about an inch in thickness, but no other derangement in the structure of the heart, or its valves, was observed. The capacity of the cavities seemed natural. The aorta expanded unusually near its origin, so as to form a kind of pouch, but after giving off the branches to the head and superior ex-

tremities, its diameter was præternaturally contracted. It was continued of this diminished size, till after its union with the *canalis arteriosus*, where it was completely impervious. The coats were not thickened, or in any way diseased, except that about half an inch below the stricture, there was a smooth elevation on the inner surface, less raised, but having nearly the diameter of a split pea; otherwise the appearance was exactly such as if a ligature had been tied tightly round the artery. It is faithfully represented in the drawings.—The obstruction was about a line in breadth. The artery then received three trunks about the size of crow quills, and near them three smaller ones, afterwards resuming its natural size along the *vertebræ*. These three trunks are evidently the uppermost of the inferior intercostals. Their coats were remarkably thin, like those of veins. A probe passed from the pulmonary artery along the *canalis arteriosus*, to the obstructed portion of the aorta, but from its thickened appearance it did not seem probable much communication by means of it could have been allowed, and the florid countenance of the boy during life establishes the same conclusion. There having been no suspicion of this singular deviation from the natural structure, till after the contents of the thorax were removed from the body, it was impossible to trace with the accuracy that could be wished, the anastomosing branches by which the circulation had been carried on in the inferior parts of the body; but I

think enough has been observed to lead us very near the truth. The *arteria innominata*, the left subclavian, the superior intercostals, and the mammary arteries were much enlarged. The epigastric was reported of its natural size*. These facts, and the aorta acquiring at least very nearly its natural size immediately below the stricture†, shew that the blood did not pass to the inferior extremities, in any material quantity, as might perhaps have been expected, by the inosculations of the mammary and epigastric arteries, but chiefly by the communications of the superior intercostals

* I regret that having been obliged to leave the hospital immediately after the visit, I was not present at the inspection of the body, but the authority of the report sustains no loss by having been left to the intelligence and zeal of Messrs. Rainy, Wilson, and M'Kenzie, the resident clerks to the house, who performed the dissection. Except the epigastric artery, which it was not thought necessary to preserve, I have since repeatedly examined all the parts connected with the circulation. The whole are now beautifully preserved in the Museum of my friends Drs. Robertson and Monteath. The greatest external circumference of the aorta, near its origin, measured 3.8 inches. The left subclavian 1.3 inch. The aorta immediately after the left subclavian was given off 0.8 of an inch; and immediately below the stricture 1.6 inch.

† Dr. Monteath doubts whether the abdominal aorta is quite as large as natural. The branches given out by it were unfortunately cut off so short, that the tying of them in order to inject the portion of the artery preserved has necessarily lessened its diameter, and to this I am inclined to attribute the whole of the diminution. The measurements I have given were made before injecting, and will enable any one to determine the question by comparison with other cases.

and the mammary arteries, with the three large branches entering the aorta below the stricture: also from the mammaries and thoracics through others of the intercostal and diaphragmatic arteries.

The lungs were very light coloured; the left lobe much collapsed. In each side of the thorax there was a small quantity of bloody serum.

Remarks.

The first question that naturally arises on reading the account of the dissection, is to ascertain whether this uncommon appearance of the aorta was a congenital formation, or the result of diseased action. On the first inspection of the parts, I was led, from the limber and healthy appearance of the coats at the stricture, to believe that the appearance was a connate *lusus naturæ*, and thought to get some information from the boy's friends, of his state, especially during infancy, with a view to decide this. I have been disappointed, however, in every inquiry I have made. He had only been in Scotland five weeks before he came under my care, and I have been able to procure but imperfect information. No one knows any thing about him previous to the time he came to Glasgow. At that time, I am told, he seemed free from complaint, was active, and without dyspnœa, or any apparent uneasiness, at his sports. He was stoutly made, particularly about the chest. He was also

well limbed. He had a fair complexion and dark brown hair. The presumption, therefore, is that there was no original derangement in the arterial system, and a careful inspection of the parts, an attentive consideration of the case, and reflection on similar and analogous instances, will present a view which gives much countenance to the opinion of the blood having but recently been diverted from the natural channel.

I believe, it is found that in the deviations of nature from the ordinary structure, she seldom destroys the function of an organ, without enabling another to carry it on, and in many instances with little imperfection. I mean, of course, to except those monsters in which she disregards all rule, and which cannot live after birth. In this case, however, although there was never any deficiency of blood circulated in the lower extremities, yet the enlarged and thickened heart, and the increased diameter of the aorta at its origin, seemed to shew that there had been much resistance to the transit of that fluid; also that vessels of sufficient diameter readily to supply the place of the aorta, had not been originally furnished by nature *.

* I know that the heart is frequently much enlarged and thickened without any difficulty to the transmission of the blood; but this is a disease of much slower progress. Within these two days, I have seen such a case terminate fatally with symptoms wonderfully similar to those of Ffere. There were the same palpitations and throbbing in the neck; the same rapid pulse, for the

most

And does not the thinness of the coats of the enlarged intercostal arteries, shew that they have been under the influence of distension from preternatural impulse? It may be presumed, that if this had existed as a mal-conformation from infancy, the vessels would have long before recovered their natural structure. Nor indeed is it in infancy only, that attempts must have been made to repair this imperfection, for, if it had been a *lusus naturæ*, it must, even *in utero*, have opposed a barrier to the circulation of the whole mass of blood, as it was placed below the *canalis arteriosus*.

I think it a subject even of some practical importance to determine this point. If we find that the structure is the consequence of disease, we add, in the first place, another case to prove, that even where the great artery of the body is obliterated, there is no risk from defective circulation

most part sharp and regular; the same repeated attacks of fever and pain of chest requiring venæsection and the other branches of the antiphlogistic regimen; the same accessions of nausea and vomiting. Dissection shewed general and firm adhesions of lungs, otherwise healthy, to every thing in contact with them, and a monstrously enlarged heart, everywhere firmly united to a thickened pericardium, except at a small spot near the apex. The walls of all the cavities, particularly of the ventricles, were very much thickened, those of the left ventricle measuring more than an inch. The capacity of the auricles only was enlarged, but that greatly. Polypi were contained in several of the cavities, but having the appearance of those formed after death. The disease was of five years standing: the subject, a girl of about seventeen years of age.

in the parts below, and therefore the surgeon may be emboldened to tie any artery within reach of his knife, without fear about the transmission of the blood; and, secondly, we are taught that there may exist in the arterial system, or part of it, a disease having this effect, and yet compatible with life.

I. The first point has, I think, been long since established. There are several cases on record, of obstructions, from various states of disease, in different parts of the aorta, which must have admitted the passage of at most only a very small quantity of blood: as that related by Stenzel, (*Dissertatio de steatomatibus aortæ*;) two cases by Mekel, (*Mem. de l'Acad. R. de Berlin*, 1756;) that by Stoerk, (*Ann. Med. II. p. 171.*) Mr. Cooper tied the abdominal aorta of a dog, without material detriment to the circulation, (*Medico-Chirurgical Transactions*, Vol. II. p. 258.) In the Museum belonging to Messrs. Pattison and Russel, there is a preparation where the aorta is plugged up, by a laminated coagulum, just above the bifurcation of the iliacs, into both of which this substance extends. It is impossible to say from inspecting the preparation, whether the recent artery were absolutely impervious; and unfortunately, though Mr. Pattison at my request has kindly examined the papers of the late Mr. Allan Burns, to whom the preparation belonged, he has been unable to find any account of the case. The case which

most nearly resembles that of Frere, is one which occurred in the Hotel Dieu. The appearances on dissection are detailed by M. Paris, in Desault's Surgical Journal. The artery was not quite closed, and as the state of the heart is not mentioned, it ought perhaps to be presumed natural, otherwise there is no material difference in the cases. The identity of the site of the stricture is deserving of notice, lest after examples should prove a peculiar tendency towards its formation in this portion of the vessel. Analogy is in favour of such a supposition, definite portions of continuous and similar structures, being in many instances liable to particular diseases. It is a matter of great regret, that in the case of M. Paris, no account whatever is given of the symptoms that occurred during life. It is indeed difficult to say why morbid appearances are recorded at all, where there is no previous history, as they can be productive of little or no instruction.

II. When it was believed essential to the production of adhesive inflammation within an artery, to retain the sides in contact, it must have been very difficult to believe, that obliteration of the aorta by its means, could take place where there was evidently no pressure applied to the artery; but we now know that a vessel may be converted into a ligamentous cord, by an injury which does not at the moment interrupt the circulation through it. This is proved by Morand's case (Mem. de

P'Acad. R. de Paris, an. 1736), where the artery was closed by a violent contusion ; and still more unequivocally by Jones's experiments (Jones on Hæmorrhage). The Society will recollect instances on record, though I cannot at the moment refer to them, where on dissection both arteries and veins have been found obliterated without any evident cause. It seems likely, that, in such cases, the obstruction had arisen from the same modification of diseased action as occurred in Paris's case, and in my own ; but the vessels being only of secondary importance, their loss did not destroy life. The obliteration was of small extent in the case I have related, which is to me a convincing proof that it was recent. Though ultimately obstruction to the flow of blood through an artery, causes it to close as far as the next anastomosing branch, yet this is comparatively a slow process, and not effected till after the vessel is shut at the diseased point. It will easily be believed, therefore, that in this case the narrowed diameter of the trunk of the aorta, from the left subclavian to the stricture, was a stage in its progress to complete obliteration, arrested only by the death of the boy. And though there is every reason to believe that this morbid affection was *recent*, it seems equally evident, that it could not have been *sudden*. The increased muscular substance of the heart, as well as the enlargement of the aorta, must have been a work of time. And the existence of life under so great an interruption to the vital ope-

rations, may be considered as a proof and example among many others of the 'wonderful power of nature in accommodating herself to the greatest changes in the most essential organs of life, provided such changes are slow and gradual, and provided the action of the organs is not hurried, disturbed, or over-excited. The disturbance in this case consisted in the accidental catching of cold, producing catarrhal fever. The practical inferences from this are obvious, for it is clear, that under this, and all other incurable organic læsions of vital parts, life can be protracted and suffering alleviated, only by avoiding exposure, fatigue, emotions of mind, and stimulating diet.

Glasgow,
June 27, 1814.

EXPLANATION OF THE PLATE.

- Fig. I.* a. The right ventricle slit open, and gaping from a piece of bougie placed in it.
 b. The tricuspid valve, with the opening from the auricle.
 c. Part of the right auricle.
 d. The dilated portion of the aorta.
 e. The enlarged arteria innominata, puckered from a ligature having been passed round it when the vessel was injected.
 f. The left carotid, of its natural size.
 g. The left subclavian greatly enlarged, immediately below which the aorta is seen much contracted, as far as
 h. Where it is impervious.
 i. The canalis arteriosus.
 j. The pulmonary artery.
 k. Part of the left auricle.
 l. The left ventricle.
 m. n. o. The enlarged intercostals entering the aorta below the stricture.
 p. q. r. Three smaller vessels torn off short.

Fig. II. Shews the opposite side of the preparation.

- a. The right auricle, with its opening into
 b. The right ventricle.
 c. The left auricle. A portion of each auricle is cut away, and in the parti-

- tion between them is seen, at d. the site of the foramen ovale.
- e. The pulmonary artery tied just beyond its division.
 - f. The canalis arteriosus.
 - g. An incision into the aorta from the stricture to the second pair of intercostals, one of which that is not materially enlarged, it enters. The incision is kept open by a piece of whalebone, which passes through the sides of the vessel. Three pairs of intercostals, of about the natural size, but torn off short, are seen lower down.
 - h. The left ventricle, with its thickened walls cut open, and held aside by a bougie.

Fig. III. A portion of the mammary artery after injection, merely to shew the increase of its size.

ACCOUNT
OF AN
EPIDEMIC FEVER,
WHICH OCCURRED AT
GIBRALTAR,

IN THE YEARS 1804, 1810, AND 1813, TAKEN FROM
OFFICIAL DOCUMENTS, MILITARY AND MEDICAL,
AND FROM THE COMMUNICATIONS OF JOSEPH D. A.
GILPIN, M.D. DEPUTY INSPECTOR OF HOSPITALS.

THE Society is indebted to the War Office, to the Medical Board of the Army, and to Dr. Gilpin, the principal medical officer at Gibraltar, during the last epidemic, for the most important materials in this article, to which they deem themselves bound to give early publicity, as it involves a question of high importance to the Army, and to the State. It is to be regretted, that there is no detailed medical history of the fever of 1804. All that is known of it, besides what is exhibited in the annexed tables, is, that it agreed in its principal character with the yellow fever incident at all times to the inhabitants of the West Indies, and occasionally in the summer and autumn to those of North America, and the South of Europe; and that few precautions were used

to oppose its introduction, or to prevent its spreading, as it was not apprehended to be infectious.

Besides the official military returns of the three sickly years, the Society has been favoured with the returns of three other years of ordinary health, preceding or intermediate to those in which the fever occurred. These were procured with a view to compare the healthy years, with those that were sickly; and also to ascertain whether, in ordinary years, there was much difference in point of mortality at different seasons.

The Society has also been favoured with an account of the weather during the last sickly season, and of the same season in the two preceding years, by Mr. Fraser, Surgeon-major to the garrison. The same gentleman has favoured us with a statement of the sickness and mortality of the town, as well as the garrison during these months. Both these are annexed to this article.

QUERIES

BY THE

MEDICAL BOARD OF THE ARMY,

With the Answers of Dr. Gilpin, to whom they were addressed.

I. Were the people who were first attacked with the disease, inhabitants of Gibraltar, or

strangers; and if inhabitants, had they recently returned from any place infected with the like epidemic, or been residing for however short a time in a place exposed to marsh *effluvia*?

Answer—They were strangers, who had come from Cadiz; where at that period, the epidemic in question prevailed. It cannot be ascertained, whether they had, or had not previously resided in any place exposed to marsh *effluvia*.

II. If it should be supposed that the disease was brought to Gibraltar by any individuals, and these persons ascertained;—did they come ill to the garrison, or had they been affected with the fever at any other town where the disease prevailed, or had they only been living in the house with the infected, or had they any communication with them by personal contact, or by means of clothes, or otherwise?

Answer—The individuals that were supposed to have brought the disease were ascertained. One of them was ill when he arrived in the garrison. It is only known that they came immediately from Cadiz, where the disease was prevalent.

III. If it has been found that any person had lately returned from an infected place, under any of the circumstances above-mentioned; did the disease first afterwards appear among the people residing in the same house with him, or with whom

he had any immediate communication otherwise, and thence spread ; and did the spreading take place in any regular progressive manner from that source ?

Answer—The disease did appear among the people residing in the same house, and speedily also on both sides of the street in which the house was situated.

IV. Although part of the town of Gibraltar, and several of the barracks are situated upon a declivity, where water cannot stagnate if left to find its level, it has been alleged that in the lower part of the town, the descent towards the sea may be so small as to prevent its passing with sufficient rapidity ; and that in the higher parts of the declivity, it being obstructed in its passage down, by artificial means formed for retaining the water, to fill the tanks or cisterns with, it may in both cases have become stagnant, and in the town especially be so near, if not upon, the surface, as to exhale through it, and mix with the animal and vegetable matter in the streets and alleys, or back grounds, privies, drains, &c. of the different houses, and so create a fruitful source of baneful *miasma*, more or less in a concentrated and active state according to the varying, and relative circumstances of the heat and moisture of the season. These circumstances you will take into consideration, with the utmost care and precision, so as to ascertain their existence, or otherwise. If they exist

wholly, or in part, how far it may appear that the origin of the epidemics of 1804, 1810, and 1813, have been connected with the miasma produced?

Answer—The town of Gibraltar is situated on the declivity of the mountain, commencing from about two hundred feet above the level of the sea, to the line wall. The declivity is very rapid, and there is no impediment either natural or artificial to prevent the escape of the water. There are no public tanks or cisterns in the town; those in private houses, are filled from the roofs only. The heats are so excessive during the summer months, as to leave no sort of moisture on the surface of the ground, even for a few hours; and the garden grounds become so hard, as to admit the insertion of a hoe with difficulty. I am decidedly of opinion, that the existence of the disease cannot have had its origin in any of the causes detailed in query, No. IV.

V. Did the disease first appear in the parts most exposed to the *effluvia*, if such may have arisen?

Answer—The disease first appeared in a part of the town, by no means particularly exposed to noxious *effluvia*.

VI. How are the barracks situated in relation to these causes respectively? If, where the water

has been intercepted in its natural course downwards, it should be found to be any where in a stagnant decomposing state, either by itself, or mixed with animal or vegetable matters; are the houses or barracks in the upper parts of the rock, where the disease prevailed in any great degree, (as has been reported by Mr. Fraser, it did last season in the artillery barracks, situated eight hundred feet above the level of the sea,) exposed to the near influence of the vapours emitted from such places?

Answer—The causes here spoken of, do not exist. The declivity of the hill is so very abrupt, that water cannot possibly remain stagnant in its passage to the sea. On a reference to Mr. Fraser, he told me, that if, in his report, he said “barracks,” it must have been through mistake; for the body of artillery alluded to were *encamped* on the height he speaks of.

VII. How is the dock-yard and navy garden situated relatively to the swamp in the neutral ground, and the ditches of the works facing it?

Answer—The dock-yard is situated about two miles from the neutral ground, which is a quicksand about a mile in length, and half a mile in breadth at the narrowest part; there is no swamp on the neutral ground, nor any moisture near its surface. Previous to the siege, the greater part of

this space was laid out in gardens, and although constantly irrigated by means of *norias**, was ever reckoned the most healthy spot about the garrison, and used as a summer retreat by the inhabitants. These facts I have from the best informed, and oldest residents. The ditches in front of the neutral ground are dry.

VIII. You say in your report, that a number of persons entirely escaped the disease, though strictly confined to the only situation where you conceive marsh *effluvia* may be supposed to exist, viz. the dock-yard and navy garden. From this it is inferred, that some persons in these places were attacked with the disease; in this case, what proportion were they to those who escaped? Could the disease in them be traced to contagion?

Answer—The dock-yard is situated under the line wall; and a drain very offensive to the smell passed through it, and has been covered over since the existence of the disease. Besides this drain, there is a stagnant piece of water, called the *Lamber*, in which boats are hauled up to repair; this, it is said, has three or four feet of mud in it, and receives great part of the filth of the shores at the south, and emits a very offensive *effluvium*. Of five hundred persons who were confined there during the whole sickness, there was not an instance of a person's being attacked. It should be ob-

* Wells.

served, that these persons held their communication with the garrison through the medium of health-guards from the Pratique-office; and the same precautions were used as are pursued in cases of plague. These facts have been ascertained by the Pratique Master himself, a man of talents and great observation; and militate strongly against the idea that the disease *originated* in noxious effluvia.

IX. It has been alleged also, that the cattle for the use of the garrison of Gibraltar, are usually landed on a moist piece of ground, situated between the wall and the water, towards the neutral ground, where the whole are left standing a whole day, depositing their dung in considerable quantity, laying the foundation of such a miasma as may be supposed to produce disease. Is this the fact, as thus stated? and if so, how far does it appear likely, either by itself, or in conjunction with other causes, producing hurtful effluvia, to have contributed to the epidemics in question? Is the practice alluded to constant? or is there reason to believe that it prevailed in a more extraordinary degree previous to the last and preceding epidemics, so as to have tended to their production? Did the disease prevail more in the neighbourhood of that place, or where the vapours from it may have been conveyed by the wind, than in others exposed to no such causes?

Answer—Since the Peace with Spain, cattle

have always been landed on the Spanish beach, at least a mile and a half from the town, and driven to the Spanish farms in the neighbourhood, from whence they are brought in every day, but never more than one day's consumption at a time, and are all slaughtered early in the morning. It formerly was the case, that the cattle were landed on a sandy beach between the line wall and the water, but that beach was by no means wet; however, such has not been the case during the last six years, and consequently the disease cannot be traced to this source.

X. Is the state of the swamp in the neutral ground ever varied by circumstances in such a manner as to be more or less productive of miasma? What is alluded to by this question is the probable case of its being half dried up in some seasons when the heat has been greater, and the rain less than usual. How are the town and barracks, in part, or in whole, relatively situated in regard to the swampy ground in question, so as to be exposed to its vapours? Are any vapours offensive to the smell presumed to come from the swamp or ditches of the works, or the burial-ground of Gibraltar? It has been alleged that from the burial-ground issues such a smell, and was perceived particularly about the end of last June, and has been suggested as one of the sources of the epidemic. How far is this the fact as to the smell, and how far might it be supposed that

something arising in the burial-ground, whether perceived by the senses or not, had any share in producing disease as far as it might be conjectured, from this prevailing especially in its neighbourhood, or in places exposed to its influence?

Answer—There is no swamp on the neutral ground. The rains during the winter season naturally lodge on the less elevated parts of it; but the water is evaporated early in the spring, and not the least moisture remains on the surface of the sand as before stated. I never was sensible of any smell from the burial-ground; nor have I ever heard any one complain of it; and I see no reason why the burial-ground should contribute now, more than it formerly did, to the creation of disease; it is a pure dry sand; it was established during the epidemic in 1804, and is at least half a mile from the town*. The ditch towards the neutral ground is a dry one, and perfectly well ventilated, and formed, not by digging, but by the erection of a glacis in front of it; it is full fifty feet wide, and the glacis which forms it, or rather the covert way, is not above fifteen feet above the level of it.

XI. Are the rubbish, filth, &c. daily taken out of the streets of Gibraltar? and in what state are

* The burial-ground, just without the south port, it has been said, has at times emitted a disagreeable odour; but I cannot say that during the numberless times I have passed it, I was ever sensible of it.

the receptacles for these articles; and how are they situated in respect to where the disease has especially prevailed? Have the cellars, yards and vaults of the houses of the lower classes inhabiting the narrow lanes and alleys, been examined, particularly in the part of the town where the disease made its appearance in 1804, 1810, and 1813?

Answer—The rubbish and filth are removed daily from the town, and deposited on the neutral ground, full half a mile from the works; and the Spanish gardeners are always in waiting to receive the latter, and it is immediately carried off to their respective gardens. There are no under-ground cellars in Gibraltar; certainly not half a dozen in all the town, and these in the houses of the most considerable merchants. The lower classes of persons are certainly dirty in their houses, but not to a degree that will warrant a supposition of disease having been occasioned by that means. The population is not so extensive by 2000 persons, as it was in 1811, when the garrison was perfectly healthy.

XII. Was the first appearance in those years (1804, 1810, 1813,) in the same place?

Answer—The disease in 1804 shewed itself first in an open square. The Spanish Consul's family occupied part of the building; they remained without communication with the infected families, and

escaped infection. In 1810, it discovered itself to the southward of the town about half a mile ; and in 1813, in the centre of the town in a well ventilated street.

XIII. What is the state of the shores and ditches, particularly at that part of the works which are towards the neutral ground ?

Answer—There are no sewers near the neutral ground ; the ditch (there is but one) is a well cultivated garden.

XIV. Are all rubbish and decayed vegetables, and animal matters, carefully and regularly removed from the market-place, particularly in autumn, and the slaughter-houses kept in good order ?

Answer—Vegetables are so excessively dear, that there is scarcely any waste of them. During the summer there are none : for the trifling quantity which can be eaten by the rich, during that season, can hardly be observed in the market ; and fruit is also scarce ; the markets are cleared, and the refuse carried out every day. There is but one slaughter-house in the garrison, which is under the line wall, built out into the sea, and the floor of it is overflowed every spring tide. But certainly at times a very unpleasant *effluvia* proceeds from it ; and it is now in contemplation to remove it.

XV. Although all the circumstances above referred to as probable causes of producing the miasma that is considered the cause of remittent fever, may be found to have existed in a greater or less degree, does it appear that the remittent fever, similar to that endemic in the marshy districts of warm climates, prevails annually at Gibraltar; and do intermittents prevail there? Did any circumstances occur last year, either connected with heat, moisture, or the winds, or with the place itself in respect to cleanliness, or the state of cisterns, water-courses, drains, &c. different from the ordinary state of them in other years, when no such epidemic has appeared?

Answer—Bilious remittent fever, and other autumnal complaints are seen in this garrison every year. In 1812 we had in the hospital, particularly of the foreign corps, and 7th Royal Veterans, some very bad cases of bilious remittent, attended with most of the worst symptoms; but I have no reason to believe that any of the circumstances enumerated in Query XV. were so different from the ordinary state of them in other years, as to create a suspicion that they contributed to the appearance of the epidemic last year. Intermittents do not prevail here; indeed I have not known a case of it occur (excepting that of the Lieutenant-Governor) but in those who had had the disease at Walcheren, or during their residence in some of the marshy districts of the peninsula. And it may be ob-

served, that this affords a very strong proof of the non-existence of marsh *effluvium* in this garrison; or at least that the production of it is too trifling to give rise to formidable disease.

XVI. Did free ventilation influence the propagation of the disease?

Answer—It had a tendency rather to check it.

XVII. When the disease spread in the same neighbourhood, house, or barracks, were the persons so affected exposed equally to the same atmosphere supposed to convey the miasma; or did the disease seem to spread from those affected to the persons situated nearest to them, and so progressively; or did it attack different persons in different places at the same time, but all exposed to the same atmosphere?

Answer—Generally speaking, the persons affected breathed the same atmosphere; but as the disease in numberless cases ran progressively through numerous families; and, as in other instances, where some members of families (whose personal attendance on the sick in their houses was not called for) escaped, though breathing nearly the same atmosphere, it is to be presumed, I think, that the disease in most cases was communicated from one person to another.

XVIII. Were many of the attendants of the sick in private houses and hospitals attacked with the same disease ; and where this did not happen, were there any circumstances evident, that might tend to have rendered such persons unsusceptible of the contagion, such as their age, previously having had a like disorder, particular precautions, &c.?

Answer—In private houses, in most cases, the attendants were attacked. There were undoubtedly many exceptions in the hospitals ; but it was to be accounted for, as, generally speaking, the attendants were persons who had had the disease previously either in the West Indies, or in Spain, or here, in 1804. At the commencement of the disease, last year, it was calculated that there were about 5000 persons within the walls who had previously passed through it ; and after careful inquiry, there does not appear to be one well authenticated case of a person's having received the infection a second time. I heard, indeed, of three or four ; but as the nature of the *previous* fever could not be exactly known, these exceptions have but little weight in so momentous a question. The exemption from a second attack, I am credibly informed, is firmly believed in Spain. At Cadiz, last year, though the fever put on the very worst symptoms, and destroyed the patient frequently in 48 hours, the deaths did not exceed, in a popula-

tion of upwards of 70,000, fifty a day, and these were chiefly strangers. The Spaniards are so fully convinced that they cannot receive the infection a second time, that having passed the disease is matter of great rejoicing among them; and a medical certificate of the fact is a sufficient passport into an infected town, which they enter without the smallest apprehension.

XIX. It appearing that several officers were seized with the epidemic, and a considerable proportion of them died, besides different persons of their families; what occasioned their exposure to the contagion? It would be proper to be particular in this part of the inquiry. During the prevalence of most contagious diseases, such particularly as that of the plague, they do not prevail in any proportion to a degree among the higher classes of people, to what they do among the lower, especially where many of the latter are living in the same house and barracks. Indeed, by the pains that have been bestowed lately at Malta, the plague was kept almost entirely from among the troops, though quartered in the large and populous town of La Valetta. Now this being the case, does it not appear probable that owing to the precautions that intelligent individuals would be induced to make use of, of their own accord, and to those that might be instituted for the safety of the soldiers of the garrison, the disease might have been

prevented from spreading among either, if the disease proceeded from contagion, but if from noxious *effluvia*, such precautions would be of little or no avail, all, or most, being unavoidably exposed to it?

Answer—In answer to this question, it may be observed, that the officers of the garrison were necessarily exposed to infection during their performance of its duties; and therefore could not confine themselves to their houses or barracks. It may also be remarked, that precautions, such as are used during the plague, could hardly be justified, unless the important point of contagion was decided upon at the very commencement of a disease. The plague can hardly be mistaken for any other. We might have been thrown off our guard, had we not seen at an early period after their arrival, two of the sick strangers from Cadiz, for the Spanish Government declared that, after the most serious and fullest investigation, no contagious disease existed in that city. One man from Cadiz died in the Catholic hospital a week or ten days before I was informed by an intelligent medical officer residing in Cadiz, that the disease *did* exist in that city at the time when the declaration above-mentioned was made. It strikes me, that, had the late epidemic originated in noxious *effluvia*, the persons confined to the dock-yard and navy garden would suffer from it in particular, and that it would have exerted some influence amidst the great number of

those who were sent out of the garrison to a situation so near it, that they must frequently have breathed the same atmosphere with those who remained within its walls.

XX. What were the precautions used ?

Answer—As soon as the disease was ascertained, a quarantine was laid on infected houses, till the sick were removed either to the civil or military lazaretto; and when they filled the wards appointed for them, those who were in large airy houses were confined to them, by guards placed at the doors. The troops were removed and encamped at Europa, and without the works towards the neutral ground, with the exception of the artillery, who were encamped on the situation alluded to by Surgeon-Major Fraser. Infected bedding, &c. was burned. Barriers were placed across several streets to render the separation of the troops from the inhabitants as complete as the duties of the garrison could admit of. Respectable merchants came forward and were appointed inspectors of the districts into which the town was divided; and instant information was given by them when any one was taken ill; and town serjeants were appointed, who immediately carried their orders into effect, by calling upon some medical person to visit the sick, and by removing them as before stated. I think I may venture to say, that every precaution was used by the Board of Health that could be devised, and

that they were promptly carried into execution by order of the Lieutenant-Governor.

XXI. Was the disease of a remitting or continued type? and if the former, did it ever pass into the intermittent, and *vice versa*?

Answer—Excepting the insidious cessation of symptoms in some cases, mentioned in the statement I sent to the Board, the type of the fever was that of continued; I never saw or heard of an instance of its having passed into an intermittent, or *vice versa*.

* REPORT MADE TO THE LIEUTENANT-GOVERNOR, BY DR. GILPIN.

Gibraltar, 10th December, 1813.

During the months of August and September last, I saw some cases of fever, which appeared to me to be the usual autumnal bilious remittent; but on visiting two men in City Mill Lane, I found them labouring under a fever, apparently of a still

* After this document had been consigned to the press, it appeared in a respectable periodical work. Though it is a rule of the Society to admit only original articles, yet as it was the author's wish, that it should first appear in this work, and as it is necessary from its connection with the other matter composing this article, to the due elucidation of the whole, it was deemed advisable not to countermand the printing of it.

more serious type; but as I saw them only a few hours previous to their death, I had not sufficient grounds, on which I could found a decided opinion as to the nature of the disease.

I was soon after called by the late Mr. Pigoli, to see some of his patients, and in their cases I recognised the symptoms and appearances of a fever which has been denominated *Typhus Ictero-des*, and of which I had seen numberless cases in the Islands of Grenada, Martinique and Guadaloupe, when Physician to the Forces under the late Lord Grey.

In the month of October I attended different families, the numerous members of which were attacked in succession with a fever of the same type; many of the symptoms were similar to those which accompany bilious remittents—such as anxiety, listlessness, alternate chilly and hot fits, white tongue, yellow skin, nausea, vomiting, &c. but those symptoms and appearances, which I considered as characteristic of the disease above-named, were the protruded red eye, and exquisite pain at the bottom of the orbit, and of the forehead, back and limbs; and as the disease advanced, the dilated pupil, excessive irritability of stomach, hæmorrhage from the mouth and nostrils, dark vomiting, skin of a dingy yellow hue, unlike the *bright* yellow suffusions of the bilious remittent; and in

many cases an entire* and fatal suppression of urine. —To this catalogue I may add, that insidious cessation of symptoms, which frequently occurs about sixty hours from the first attack, raising hopes in the patient and attendants, that are speedily quelled by an aggravated recurrence of every fatal symptom. This deceitful calm I have often witnessed in the General Hospital at St. Pierre, in Martinique.

In the general mode of treatment, the medical officers of the garrison are I believe agreed. Calomel given at first in rather a full dose, and afterwards in smaller ones at the distance of three or four hours, seems to be the means pursued; and it has been observed, that if the bowels be thoroughly opened, before the third or fourth day, the disease frequently proceeds with few untoward symptoms, and generally does so if the remedy affects the mouth. In the West Indies we hailed that effect as a very favourable one. In many cases, however, whatever might have been the previous treatment, a succession of alarming symptoms occur, and few more so, than the extreme irritability of the stomach. Various remedies have been recommended with a view to calm its violent action; the application of a blister, a table-spoonful

* The author mentions in a letter to the President of the Society, that this symptom appeared to arise from a want of secretion, as the bladder, on the introduction of a catheter, was generally found to be empty.

given at short intervals, of a mixture of equal parts of lime-water and milk, solid opium in doses of half a grain or more, every two or three hours, pills made of Cayenne pepper, brandy, &c.

But it has been observed, that a repetition of purgative injections, and the patient's refraining for some hours (should his strength admit of it) from swallowing either medicine or food, has had a good effect.

The authorities for bleeding in incipient cases of this fever, with a view to prevent congestion and subsequent topical inflammation, are no doubt very respectable, and in some cases when the patient was vigorous and plethoric, the practice has been successful. But we are now, I presume, possessed of a remedy in the affusion of cold water, which more speedily produces a solution of fever, and checks the inordinate action of the heart and arteries, from the continuance of which arise the congestion and topical inflammation so much to be dreaded. It is a mode too of removing fever, which possesses one great advantage over that by the lancet; for though it should not produce the complete effect intended, it certainly does not diminish the patient's strength, but leaves him in a state that may enable him to bear the operation of any other energetic remedy that may be thought necessary. On the other hand, should the loss of blood fail in its effects, we may easily conceive how ill the subject of it would be prepared to

struggle against a disease so frequently rapid and fatal in its termination.

I cannot say, however, that I saw many cases here in which I would have recommended the cold affusion. Neither the state of the pulse, nor the heat of the body, were such as, in my opinion, to warrant the application of it. I preferred, therefore, repeated *tepid* spungings with vinegar and water. Children, indeed, were much benefited by the cold affusions.

That the disease in question is contagious, (or more properly speaking, perhaps, *infectious*, as actual contact does not appear to be necessary to its transmission) I entertain not the least doubt, though an opposite opinion has been held by some highly respectable medical characters. I have witnessed both abroad and in this garrison too many melancholy instances of the disease being communicable from one person to another. At Martinique, in the year 1793, we suffered dreadfully from the ravages of a fever, in every respect similar to that which lately appeared here, and in numberless instances its infectious nature was ascertained by its attacking those who were in attendance on the sick; and it is a melancholy truth, that very few of the medical officers survived the pestilential duty in which we were employed. But as in this statement I am only called upon to give my *own* opinion, I do not think it necessary to combat further the opinions of others. I shall

merely add, that innumerable circumstances have brought a degree of conviction to my mind, that is not to be shaken by any arguments or reasonings on the side of *non* contagion, that I have hitherto read or heard of.

In endeavouring to account for the production of the disease in this garrison, many difficulties no doubt arise, which I do not by any means pretend to solve, but merely to state some of those, which in my opinion militate against the idea of the disease having *originated* in Gibraltar. I find a difficulty, for instance, in viewing it as an endemic proceeding from marsh miasma or other noxious exhalations, as a considerable number of persons entirely escaped the disease, though strictly confined to the only situations where I conceive these *effluvia* may be supposed to exist, the Dock Yard and Navy Garden*. I find a difficulty too, in attributing it to the peculiar state of the atmosphere at the period of its appearance: for during the number of years† that have elapsed, since we have held this rock, surely the state of the atmosphere, and supposed prevalence of marsh miasma, &c. must frequently have been as *they were* in the years

* The following certificate is in proof of this assertion :

“ The undersigned has a daily report from the health guard placed at the point of communication with the Dock Yard; and it does not appear that from the commencement of the existing fever, there has been one case among the workmen there.

Gibraltar, 8 Dec. 1813.

H. SWEETLAND,

DR. GILPIN.

Pratique Master.

† Gibraltar came into possession of the English, in 1704.

1804, 1810, and 1813, and I have not heard that a fever of a similar type to that which prevailed during those years is on record.

Local circumstances, such as a great increase of population, crowded dwellings, &c. may have varied no doubt, and concurred in rendering the type of a reigning fever more malignant; but for some years past, I am informed, there has not been much variation in these respects.

I am inclined therefore to believe that this infectious fever was brought into the garrison by a person who died of it, soon after his arrival, as it was said, from a place known to be infected previous to his leaving it: from affidavits on record, it appears, that it was introduced in a similar way in 1804, and had it not been for the prompt and vigorous measures pursued, the year 1813 would have exhibited as melancholy a list of victims.

JOS. D. A. GILPIN, M. D.

Dep. Inspec. of Hospitals.

Dr. Gilpin, in his letter to the President of the Society, states, "that he had not heard that the members of any family, except his own, had entirely escaped the disease; that he ascribes this to their all taking four doses of bark daily, and that he had practised the same precaution with the like success in the West Indies."

He states in the same letter, that above 8000 people were turned out of the place, and that between the 8th of September and the 3d of December, 2847 persons were attacked, of whom 904 died, and of these 460 were of the military.

Statement made by Dr. JOHN COSTES, to Dr.
GILPIN.

On the 11th of August 1813, a vessel called the Fortune, whereof was master or patron, Ludovico Bosano, alias Malta, arrived at Gibraltar, from Cadiz. One of the crew thereof being ill, was sent to the Catholic hospital, and died on the 19th of the same month, with every symptom of the yellow fever, now prevalent.

A Frenchman, a native of Paris, died on the 3d of September in Government Street, near City Mill Lane, with the same symptoms as the former man, and who had been a passenger with him in the vessel above named. Between the 3d and 11th of September, died nine persons in the same neighbourhood; and on this day I saw in the same district two cases of the fever; which I instantly reported to Dr. Gilpin, and Mr. Fraser.

(Signed) JOHN COSTES.

The Society, having through their President, applied to the Medical Board of the Army for information respecting the Epidemic of 1810, were favoured with the following Answer.

*Army Medical Board Office,
August 17, 1814.*

SIR,

In reply to your letter, dated the 12th instant, we have the honor to say, that very little more than usual disease appeared in the garrison of Gibraltar, in the year 1810; except in the regiments which had been on the * expedition to Walcheren in the preceding year, and sent to Gibraltar in the course of that year. Among them there appears from the returns and reports of Dr. Pym, Deputy-Inspector of Hospitals, to have occurred a good deal of intermittent fever, a disease not common in the place on other occasions; but upon the whole, many of the men recovered with equal if not greater rapidity than the like cases did in England. Some transports arrived in Gibraltar Bay from Carthagen, with deserters from the French army, and in five of those ships a fever existed, which gave alarm to Dr. Pym; and in consequence, all promiscuous intercourse between them and the shore was prevented. It soon spread to the other transports, and several men on board

* This expedition took place in autumn, 1809. See the first article of Vol. III. of these Transactions.

fell victims to it. The fever appeared to that medical officer to be the same disease which prevailed so fatally at Gibraltar in 1804; and as it was considered by him as infectious, all his precautions were directed accordingly; and, as it seems, with the best effect. A ship was provided as an hospital for the men taken ill, and a medical officer, Assistant-Surgeon Arthur, of the 4th Veteran Battalion, volunteered his attendance of them. He went on board on the 17th, and was attacked with the fever on the 21st of October. The garrison and inhabitants at that time appears to have been healthy, with the exception above-mentioned; but about the end of the month it was reported to the Deputy-Inspector, that an inhabitant (named Boschetti) was ill of fever, who, when visited by him, seemed to be labouring under the last stage of the yellow fever; a servant of the family was soon afterwards attacked with the like symptoms, and the fever began to spread in the neighbourhood, where upon decisive measures being recommended by Dr. Pym, and promptly put into execution by the order of the Lieutenant-Governor, viz. removing all the infected persons to a lazaretto hospital, and putting the families they belonged to into tents in the neutral ground, with other means with the same view, the disease made no further progress worth notice. At the same time, a few cases of the like disease appeared among the troops quartered in the same district, all of which, along with the corps the men belonged to, the 7th Royal

Veteran Battalion, were immediately removed out of the town, and the fever soon afterwards disappeared. Six men of the troops died, and seven or eight of the inhabitants; and it is proper to remark, that all those taken ill were in the neighbourhood of each other. Among the deaths, was the wife of an Assistant-Surgeon of the Royal Veterans, whose servants also were seized with the fever.

In the same season of that year, as it is well known, a fatal epidemic prevailed at Carthage and Cadiz, which Sir James Fellowes, the principal medical officer at the latter, reported to resemble that of 1804, which he saw at Gibraltar; and likewise that of the West Indies, and of North America; but at Cadiz, the fever was chiefly confined to the inhabitants, great part of the British troops quartered at the town of the Isla at some distance from the former, escaping it. The Royal Artillery, however, left in town, was not so fortunate, the epidemic getting among them, and proving fatal to several.

The above-mentioned able and intelligent medical officers may have it in their power to furnish you with further information on the nature and probable cause of that fever. We need only say, that they seemed to have had no doubt of its being of the same nature with the one which has occasionally appeared in the South of Spain, re-

sembling in its most striking features the yellow fever (*typhus icterodes*) of the West Indies, and North America ; and both of these gentlemen report the remarkable fact, that persons who had been previously affected with the fever were not attacked by it a second time, as Sir James Felloes observed was the belief, and actually the case at Cadiz; and Dr. Pym was so impressed with it, as to have left men who had been in the West Indies in the infected barracks of the Royal Veteran Battalion, while all the others were removed to camp.

We have the honor to be,

Sir,

Your most obedient humble servants,

JOHN WEIR,

CHARLES KER,

W. FRANKLIN.

To Sir GILBERT BLANE, Bart.

Remarks.

The most obvious and important remarks, arising out of the preceding documents ; are—

I. The belief of the principal medical officers in the infectious nature of this epidemic.

II. That the prevalence of it, like that of the

plague, is limited to a particular season of the year. The season at Gibraltar, is the months of September, October, and November. The number of deaths in December is considerably above the average of the rest of the year, but they are chiefly cases in which the seizures must have been in the preceding months; for it appears from Mr. Fraser's table, that the number of new cases diminished rapidly even in November.

III. The various degrees of mortality in the sickly years, as compared to each other, and as compared to the years of ordinary health, are exhibited in the tables. In the year 1804, the proportion of annual mortality taken on the average strength of the garrison, was 1 in 5.4. The whole number of deaths in this year was 548, of which only 44 occurred in the nine months exempt from the epidemic. In the year 1810, the proportional annual mortality on the average strength of the garrison was 1 in 16.1. This was more equally diffused through the year, imputable no doubt to the presence of those regiments which had served in Walcheren. The whole number of deaths was 307, of which 187 occurred in the nine months which are not liable to the epidemic. In 1813, the proportional annual mortality on the average strength of the garrison was 1 in 10.6. The whole number of deaths was 326, of which 260 occurred in the three epidemic months.

IV. It appears from the reports of mortality in the three years of ordinary health, that in the three months to which the epidemic is incident, the mortality is not greater than in the other months of the year.

V. That the average mortality of the years of ordinary health is 1 in 48.4. This is a rate of mortality considerably greater than what takes place in the same class of subjects in England; for by the returns of population in 1811, the rate of mortality there in all ages was 1 in 49. And it appears by calculations, instituted with a view to ascertain the value of lives in granting annuities, that the mortality of persons in the prime of life is about one half of what it is on the whole population of all ages. Is this difference owing merely to climate, or in part also to some peculiar circumstances in the situation of this garrison?

Return of the Effective Strength of the Garrison of Gibraltar, and the Number of Deaths which occurred in each Month, of the Years 1804, 1810, and 1813, exclusive of Artillery* and Engineers.

Adjutant-General's Office, June 29, 1814.

	In 1804.		In 1810.		In 1813.	
	Effectives.	Deaths.	Effectives.	Deaths.	Effectives.	Deaths.
In January	3084	0	5032	14	3783	13
February	3036	1	4286	13	3787	10
March	3032	4	5497	17	3766	8
April	3050	1	6896	16	3398	4
May	3084	2	6707	26	3396	3
June	3096	1	6392	20	3514	7
July	3099	4	5842	21	3461	7
August	3086	3	5982	37	3456	3
September	3133	31	7252	38	3423	30
October	2774	359	6351	43	3263	160
November	2569	114	5761	39	3234	70
December	525	28	5623	23	3226	11
		548		307		326

* These Corps do-not report to the Adjutant-General's Office.

Return of the Effective Strength of the Troops, and the Number of Deaths which occurred in the Garrison of Gibraltar, in each Month of the Years 1803, 1807, and 1812.

Adjutant-General's Office, July 13, 1814.

	In 1803.		In 1807.		In 1812.	
	Effectives.	Deaths.	Effectives.	Deaths.	Effectives.	Deaths.
In January	3193	7	5110	10	4962	18
February	3188	1	5049	11	4880	15
March	3130	3	5141	5	4875	6
April	3136	4	5281	6	4232	7
May	3130	6	5268	8	4233	4
June	3563	4	4726	7	3851	11
July	3264	9	4910	7	3865	4
August	3204	6	4875	7	3858	8
September	3189	3	4180	9	3847	4
October	3105	3	4166	11	3840	5
November	3136	6	4183	9	3831	9
December	3155	4	5882	15	3847	9
		56		105		100

**Return of Inhabitants and Soldiers, who died in
the Garrison of Gibraltar, from the 30th of
September, to 1st of December, 1804.**

Inhabitants	4864
Royal Artillery.....	200
Royal Military Artificers.....	123
Barrack Artificers.....	15
2nd or Queen's regiment.....	91
10th ditto	28
13th ditto	128
54th ditto	100
De Roll's	188
Officers	57
Jews	730

Total 6524

This return was given to me by a very respectable inhabitant of Gibraltar. As I was not in the garrison at that period, I cannot vouch for its accuracy; but from what I have heard from those who were there, I believe it to be near the truth.

JOS. D. GILPIN.

**GENERAL STATEMENT of Sick and Deaths, from the Epidemic Disease in Gibraltar,
from 8th September to 13th November, 1813.**

Dates.	New Cases in				Deaths in				Detail of Military Deaths.			
	Inhab ^{ts} . Laz ^{ts} .	Town.	South.	Military Hospitals.	Inhab ^{ts} . Laz ^{ts} .	Town.	South.	Military Hospitals.	Total number of Deaths.	Regiments.	N ^o .	
To 17th September, 1813..	54	17	—	—	71	16	17	—	83	Officers	24	
24th	110	—	—	211	321	26	—	28	79	Royal Artillery	66	
1st October	134	45	8	165	352	60	34	61	155	Royal Sappers and Miners	18	
8th	107	94	11	232	438	50	21	49	123	4th R. V. B.	57	
15th	104	198	27	261	590	48	20	69	139	7th	69	
22d	81	181	15	289	566	46	48	79	178	11th Foot (Detach ^t)	15	
29th	34	63	3	158	258	26	5	57	117	26th	49	
5th November	9	14	—	95	118	3	3	25	31	Foreign Recruits	50	
13th	8	6	2	59	75	6	4	16	28	Barrack Department	3	
										Soldiers' Wives	58	
										Children	6	
Total.....	635	618	66	1470	2789	281	201	17	384	883	Total	441

To	Dr. GUPIN.	W. W. FRASER,	Surgeon-Major.
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To
Dr. GURPIN.

W. W. FRASER,
Surgeon-Major.

STATE OF THE WEATHER IN THE AUTUMNS OF
1811, 1812, 1813, unto 13th November.

Population before 8th Sept. 1813.	
Civilians estimated at.....	15,000
Garrison Soldiers, Wives and Children	5,501
Total.....	20,501

Present Civil Population.

British Settlers	882
Natives of Gibraltar	1699
British & native Jews	555
Foreign	325
Spaniards	1378
Portuguese	747
Genoese	1398
Sardinians	182
French	61
Germans	116
Moors.....	27
Total.....	7370

This unusual quantity of rain began to fall whilst the epidemic was at its acme, and produced no alteration. The state of the thermometer, &c. &c. was taken at 10 A.M. and 3 P.M.

* Seven days N.E. wind in October, 1813.

Months.	Thermometer.			Wind.			Days Rain.	
	Highest.	Lowest.	Medium.	East.	West.			
September	78½	71	75	14	16	1	5	4
October	75	64	70	20	11			
November	68	61	65½	19	9			
Pluviometer to 31st October.								
Inch. Parts.								
2 64½								
Months.	Thermometer.			Wind.			Days Rain.	
	Highest.	Lowest.	Medium.	East.	West.			
September	82	75	79½	14	16	3	8	9
October	78	66	69½	6	22			
November	72	60	66	13	14			
Pluviometer to 31st October.								
Inch. Parts.								
1 72								
Months.	Thermometer.			Wind.			Days Rain.	
	Highest.	Lowest.	Medium.	East.	West.			
September	80	67	74	17	10			4
October	76	62	69	14	*10			10
November	68	60	61½	9	4			1
Pluviometer to 31st October.								
Inch. Parts.								
11 52								

This unusual quantity of rain began to fall whilst the epidemic was at its acme, and produced no alteration. The state of the thermometer, &c. &c. was taken at 10 A.M. and 3 P.M.

* Seven days N.E. wind in October, 1813.

ON THE
DIURETIC PROPERTIES
OF THE
PYROLA UMBELLATA.

By W. SOMERVILLE, M.D.

DEPUTY INSPECTOR OF MILITARY HOSPITALS.

COMMUNICATED IN A LETTER TO

SIR WALTER FARQUHAR, BART.

Read July 19, 1814.

London, 29th June, 1814.

MY DEAR SIR,

In order to shew the grounds upon which a favourable opinion was formed of the virtues of the *pyrola umbellata*, I shall take the liberty of recalling to your recollection some particulars of the case in which I first had occasion to use that plant as a medicine; the more especially since it is well known to you, that the disease was fast hastening to a fatal termination before we became acquainted with the remedy to be spoken of.

Sir James Craig, our late able governor of British North America, was attacked with symptoms of

general dropsy about the sixtieth year of his age, the disease in its progress having assumed the forms of hydrothorax, anasarca, and ascites.

The eminent physicians with whom I consulted, ascribed the dropsical symptoms to organic disease of the liver, the existence of which was proved by a palpable induration of a portion of that viscus. It was not difficult to account for the presence of that morbid affection, when it was considered, that the patient, possessing great energy of mind and activity of body, had done the duty of a soldier forty-nine years, under every vicissitude of war, wounds and climate, in every quarter of the globe : he had also undergone repeated attacks of bilious remittent fever, in India.

To remove or alleviate the symptoms immediately resulting from the affection of the liver, recourse was had to mercury in various forms, to Cheltenham water and other saline purgatives, in addition to the attention to regimen and diet.

In Gibraltar, in May, 1805, a train of anomalous complaints, with which Sir James had long been harassed, ended in difficult respiration, attended with a sensation of tightness round the margin of the diaphragm, a diminution in the quantity of urine, and cedematous swelling of the legs.

Temporary relief was procured by the administration of calomel and squill, cathartic medicines, and digitalis.

The signs of dropsy, however, recurred frequently, and the changes were rung upon the remedies usually prescribed in that disease : and as it usually happens in those cases which owe their origin to organic derangement, even the medicines which had occasionally proved the most efficacious, in their turns became inefficient, from habit or from other causes.

A more alarming relapse than any that had preceded it, took place in Sicily, in January 1806, and the symptoms attending it were daily aggravated till the month of March. The field of speculation had already been so much narrowed by former experiment, that I was much at a loss. I recollected to have seen an aggravated case of ascites, in a man whose countenance bespoke habitual intemperance, for whom two grains of elaterium were prescribed : many copious watery stools soon ensued, by which the enlargement of the abdomen was speedily reduced, but the patient did not recover.

It was not likely that elaterium in a similar dose should prove more successful in a patient whose constitution was so much exhausted by long protracted disease, as that of Sir James Craig ; but powerful

as elaterium is in its operation, I thought it might be exhibited in doses so small as to preclude the peril arising from hypercatharsis, while its energy as a hydragogue might be exerted and maintained by the repetition of such small doses, and at such intervals as the effect of what had already been taken should warrant. My patient earnestly desired that the experiment might be made.

His bowels had become so sluggish, that a spontaneous evacuation rarely occurred, and even large doses of calomel, gamboge and jalap, had frequently failed: the absorbents and kidneys were so torpid, that the quantity of urine voided in the space of twenty-four hours, had seldom amounted to six ounces, for many days.

The fourth part of a grain of elaterium formed into a pill, with a few grains of compound powder of cinnamon, was given: no operation having been produced by it in four hours, another similar pill was given: as the second only occasioned a murmuring noise in the bowels, a third was given in four hours more, which soon brought away a great quantity of hard, dark coloured fetid fæces, together with copious watery stools: a brisk catharsis was kept up by a fourth pill, but the patient began to complain of languor and gnawing pain in the intestines, although he had taken nourishment with more than ordinary relish in the course of the day. I therefore deemed it expedient to allay the

irritation by means of an opiate, well satisfied in having ascertained the safety of the plan.

The patient informed me next morning, that he had passed comparatively a good night, and that the kidneys had begun to resume their functions; his health continued to improve daily, and I advised him to return to England, as soon as he was sufficiently strong to bear the voyage. He arrived, early in summer. Every symptom of dropsy disappeared; he soon regained his flesh and strength, and in autumn was able to resume his wonted habits of exercise. However favourable these circumstances were, none of his medical friends entertained the idea that the disorder was radically cured.

Sir James was appointed to a command in England, and endured the fatigue of that duty so well, that he was called upon to undertake the government of British North America.

The inclemency of weather usually experienced in a voyage to Quebec, late in autumn, proved very injurious to Sir James: his former complaints recurred, and continued with short intervals of respite, to harass him while he remained in that country: the practice adopted was attended with various success, till at length the elaterium itself, which he used to call his chain-pump, lost its faculty of emptying the abdomen, having become more precarious in its operation, and less manage-

able as the patient grew weaker: the ordinary doses sometimes produced no effect, sometimes severe pain, and when opium was given to allay the irritation, it also frustrated the operation of the medicine.

From an earnest desire of his own, he took an ounce of sulphate of soda every day for fifty-two consecutive days, in winter 1810-11; an irksome and unprofitable discipline, which only served to add another to the number of disappointments he had already experienced.

Every expedient used to arrest the progress of the disease having failed, it now became necessary to have recourse to the operation; accordingly on the 10th of February, thirty-six pints of clear yellowish fluid were drawn off. The relief obtained was very transient, for in the course of a very few days the abdomen began to fill again, and increased its dimensions so rapidly that we were obliged to repeat the operation on the 19th of May.

A few days previous to this I received a letter from an officer of the medical staff in charge of the hospital at William Henry, to whom I had applied for information respecting the medicines used by the Indians. Mr. Carter in his letter stated, that "having a patient, private John M'Can, of the 49th regiment, labouring under ascites, and after administering digitalis, crystals of tartar, and

other diuretic medicines to no effect, the water in the abdomen continued to increase rapidly. I was resolved previous to my making use of the trochar to try the effect of the herb *de paignè*. He commenced taking a strong infusion of the plant on the 15th instant (April 1811). The next morning when I visited the hospital, I was agreeably surprised, when he informed me, that he had voided more water in the night, than he had done in three nights and days previous put together, which I believe to have been the case from the quantity he shewed me he had made in the night. The colour of his water was entirely changed from that of brick-dust to the colour exactly of the infusion of the herb he had drunk. The water in the abdomen continues daily to decrease, and I have the most sanguine hopes of his speedy recovery."

"The herb does not appear to possess any narcotic quality, being perfectly innocent in its operation."

There was great disparity between the two patients, in years, vigour of constitution, and probably in the source of the disease; yet the favourable result of so opportune an experiment, could not fail to hold out some encouragement; on the 19th of May, therefore, immediately after the second operation, Sir James was directed to begin taking a strong infusion of the whole plant, in the quan-

tity of a pint in twenty-four hours. Prepared in this way, the medicine is nearly of the colour of the infusion of green tea; its taste is agreeably bitter.

The benefit derived from the use of this herb was not very durable; but while it lasted, it exceeded any expectation I had formed: its influence on the kidneys was apparent in two days, for the quantity of urine discharged in twenty-four hours amounted to two pints, and was soon increased to three and occasionally to four pints: a decided effect was produced upon the stomach which we had not looked for, namely an increase of appetite. The strength improved daily, the countenance became less sallow, and the abdomen did not begin to fill for several weeks after the second operation.

With a view of ascertaining the power of the medicine, I ordered a pint of the infusion to be drunk by a young man who had fractured his arm, but who was in perfect health in all other respects. He was not prepared to look for an increase in the quantity of his urine. He informed me next morning that he should have slept well, if he had not been constantly waked by calls to make water.

The herb called by the Indians *de paigné*, and by the Canadians *l'herbe a pisser*, is the *pyrola umbellata* of Linnaeus.

Sir James took the pyrola in various forms with benefit, and had even rallied more than might have been expected at so late a stage of his disease. He left Canada in June, and in the foggy weather on the banks of Newfoundland in July, symptoms of dropsy again appeared, and made such progress after his arrival in England, that the operation was required towards the end of August. The pyrola resumed its power, but maintained it for a shorter time than after the former tapping. Purgative medicines were again tried without advantage: scammony in the dose of thirty-six grains operated feebly. The trochar was again used, and in January, 1812, Sir James sunk under the pressure of a long protracted malady, which he had endured with fortitude so many years.

It may perhaps render the statement of this case more interesting, to subjoin the report of the inspection of the body, on the 14th of January, 1812.

About four quarts of water were found in the cavity of the abdomen: the peritoneum was everywhere much thickened, and the intestines were glued together from the effect of inflammation. The liver had its peritoneal coat changed into cartilage, and adhesions had formed between it and the stomach: the internal coat of the stomach was much inflamed, and its substance thickened.

The substance of the liver had innumerable tu-

bercles dispersed through it : the gall-bladder was contracted and thickened, and contained two small calculi. The other abdominal viscera were sound, except in their peritoneal coat.

The lungs on the left side were sound, but compressed on the right side by three pints of water.

The pericardium contained six ounces of water.

The heart was somewhat larger than usual.

In the belief that the virtues of this plant do not reside in any volatile principle in its composition, I was induced to vary the mode of preparing it, in order to augment its strength without adding to its violence ; a decoction was therefore used instead of an infusion. An ounce of the dried plant including the root, stalk and leaves, cut small, and macerated twelve hours in two pints of cold water, then boiled till it yielded one pint of strained liquor, was found to act with greater energy than the infusion.

It was an object of some consequence to have so valuable a medicine reduced to the most compendious form, to insure a supply when the forests of America should be no longer within reach. I therefore requested Mr. Carter, in whose accuracy and care I could place entire confidence, to make an extract of the pyrola. He found that thirty-

four pounds avoirdupois of the recent herb produced four pounds of extract. I have given five scruples of this extract in twenty-four hours. The extract may be administered made into pills, or as you, Sir, have recommended, dissolved in a small quantity of boiling water.

Sir James Craig and other patients have remarked, that an agreeable sensation was perceived in the stomach soon after taking the pyrola, followed in some instances by an extraordinary increase of appetite.

This gives it a great advantage over other diuretics, of which none are agreeable to the stomach, and most of them are very offensive to it.

It need scarcely be observed, that to remove the fluid, by the effusion of which dropsy is characterized, is not to cure the disease of which the fluid preternaturally accumulated is, in so many cases, only a symptom, or remote effect; but since that is often the only relief we can aim at, it will readily be acknowledged, that the pyrola umbellata will fill a place unoccupied by any other medicine, and supply a *desideratum* in the list of diuretics, if more extensive experience shall confirm the opinion I have formed of its virtues. It generally increases the secretion of urine, and retains its influence on the kidneys for sometime; it occasionally acts as a tonic, and in all cases is free from those

offensive and even deleterious qualities which frequently interdict the application of some of the most powerful diuretics.

You may recollect having prescribed a portion of the pyrola which I had sent from America, to be taken in infusion, by a lady who had then been tapped eight times: her account of its effects is very favourable: thirteen quarts of fluid had been taken from her by Mr. Heaviside on the 23d of July, 1811. She says, "that strength, sleep, appetite, and spirits had left her, she began to take the infusion of pyrola eight days after the operation, and to her great surprise, a very few hours after she had taken the first two ounces, she voided two quarts of urine of the colour of the medicine, a quantity equal to what she had previously been accustomed to pass in four days." She took the medicine ten days, when her supply was exhausted, passing from three pints to two quarts of urine daily. In her anxiety to persevere in the use of a medicine that had done her so much good, she boiled the portions of pyrola, from which an infusion had already been made, and experienced the same advantage from the decoction: she continued to make the same quantity of water for some days, after she was obliged to leave off. In a letter, dated the 18th of August, 1811, she writes that "she had passed a certain period, at which she usually began to fill; yet she remained quite well, slept well, had a voracious appetite, her strength and

spirits had returned, and instead of a cold shivering sensation, she then felt a proper warmth, such as she had not experienced for years. In the end of August, she walked from her own house in Gloucester-place to the Strand. The disease returned, but not till twice the usual time had elapsed, at which she used to fill. The fallacious hopes she so anxiously cherished have not been realized, for she has been tapped, for the thirty-fourth time, a few days ago.

The colour imparted to the urine, has been observed by several persons who have taken the pyrola, but it does not always take place ; I think it follows the use of the infusion or decoction more frequently than of the extract.

I have generally found the good effects of the pyrola upon the stomach, and as far as my own experience or information extend, no circumstance has occurred to forbid the use of it in any form, or to limit the dose.

The extract was prescribed in three hopeless cases of ascites accompanied with unequivocal marks of organic visceral derangement ; the patients were private soldiers : in two instances, the kidneys were stimulated powerfully ; in the third the patient complained of sickness at stomach, and did not persevere in taking the medicine.

The surgeon of the East York militia was cured of dropsical symptoms by the extract of pyrola.

Dr. Satterley informed me, that the quantity of urine was increased in two cases under his care, by the administration of the pyrola ; and Sir Gilbert Blane has very lately communicated to me, that Dr. Marcet has found, in two instances, striking effects from the pyrola, which he tried at Guy's Hospital, in doses of fifteen grains of the extract, thrice a day.

A young woman who took the extract, experienced great increase of appetite, as well as an augmentation of the discharge of urine of a greenish colour. She adds that, at the same time, she felt a most uncommon sensation in the small of her back, in the region of the kidneys : sometimes on one side of the spine ; sometimes on the other, as if something were fluttering within, without occasioning pain or uneasiness of any sort. She has never experienced the same sensation since she left off taking the extract of pyrola.

The pyrola umbellata is found in great abundance in the Pine forests in North America, growing luxuriantly under the shade and shelter of the trees, in dry sandy soil enriched by decayed leaves. It sends out long roots horizontally, from which stems shoot up at short intervals, propagating itself in this way, as well as by seed. It

is a beautiful shrub, well worthy of a place in a garden on that account, independent of its merits as a medicine.

It has been found very difficult to cultivate this species of the pyrola in England; indeed, I have only found one plant of it alive, of a great number I brought from Canada, in summer 1811; that plant is in Mr. Malcolm's garden at Kensington.

The Hurons and other Indian nations are well acquainted with the operative effect of the pyrola, and have long been in the habit of using it in all disorders which they ascribe to a diminished secretion of urine, or which they think may be cured by an increase of that secretion. They use it in gravelly complaints very commonly.

I am not acquainted with any author by whom the medicinal virtues of this species of pyrola are mentioned. In the *Flora Americæ Septentrionalis*, Pursh says, that the pyrola maculata is useful in hysteria.

In a case of acute rheumatism, in Canada, I saw the leaves of a plant which I suppose to have been the pyrola umbellata, applied as a cataplasm to the shoulder affected: the bruised leaves of the recent plant held to the fire till they were as hot as they could be endured, were applied to the part in a warm towel, for three hours. The application

produced great heat, irritation, and redness in the part, followed by such sharp pain, that profuse perspiration over the whole body ensued, which was kept up in bed by warm drinks and clothing, for six hours. I am inclined to believe, that perspiration induced by any other means, rather than by the intervention of sudorific medicines taken inwardly, will be found beneficial in rheumatism. At the Cape of Good Hope, the Dutch inhabitants use the warm bath at Zwarte Berg in this view. The water is of the temperature of 107°, where it issues from the ground, but it cools to several degrees lower before the bath is filled. The rheumatic patient remains immersed in the water, as hot as he can bear it, from fifteen minutes to half an hour, or even longer, he then retires to a warm bed in an adjoining room, to *sweat out*, as it is called in that country; an operation which lasts an hour or two according to the habit of the individual: certain it is, that rheumatism is often cured in this way.

As it is of the utmost consequence that the identity of medicines should be ascertained, particularly those of the vegetable kingdom, where there is great room for ambiguity, it has been thought advisable to subjoin a botanical description, and a coloured figure of this plant.

The value of ancient medical writings is considerably diminished, by the great difficulty and even

impossibility of ascertaining the greater number of those articles of the *materia medica*, referred to in their works. There is perhaps no vegetable production mentioned by these writers, which we can now identify with confidence, (except opium, and perhaps aloes,) for want of proper descriptions. This objection will not apply to modern writing, for in consequence of the great precision to which the arrangement of natural objects has been brought, by the happy method of description, founded on the admirable system of botany invented by Linnaeus: the various articles of the *materia medica* will be clearly recognizable to the latest posterity.

W. SOMERVILLE, M.D.

Deputy Inspector of Military Hospitals.

PYROLA UMBELLATA.

CLASS AND ORDER, DECANDRIA, MONOGYNIA.

Generic character of Pyrola.

Calyx, quinque partitus.

Petala, quinque.

Capsula, supera, quinquelocularis, angulis dehis-
cens, polysperma.

Antheræ, poris duobus.

Specific character of Pyrola Umbellata.

Floribus subumbellatis.

Detailed description.

Radix repens.—Caules subdecumbentes, lignosi, spithamæi.—Folia aliquando verticillata, opposita vel sparsa, subsessilia, in petiolum decurrentia, cuneiformi-lanceolata, obtusa, argute serrata, superne lucida viridissima, inferne pallide virescentia. Pedunculi terminales, terni, quaterni sive quini. Flores formosi, minores quam in pyrola rotundifolia. Calyx, perianthemum 5 partitum, exiguum. Petala 5 alba, apicem versus rubicunda. Filamenta 10, filiformia, brevia. Antheræ bicornes. Stigma capitatum, obtusum, magnum. Habitat in sylvis umbrosis Americæ Septentrionalis.

CASE

WHERE

A. SETON

WAS INTRODUCED BETWEEN THE

FRACTURED EXTREMITIES OF A FEMUR,

WHICH HAD NOT

UNITED IN THE USUAL MANNER;

WITH SOME OBSERVATIONS ON THE METHODS WHICH
HAVE BEEN EMPLOYED TO PRODUCE REUNION IN
FRACTURED BONES.

By JAMES WARDROP, Esq. F.R.S. EDIN.

Read February 15, 1814.

WHENEVER any of the bones of a living animal are fractured, the regenerative powers of the system are as actively employed in producing a reunion of the broken extremities of the bone, as these powers are exerted in uniting a wound of the skin or any of the soft parts. If the animal be in a state of health, the process of reunion goes on progressively, and is generally completed after a certain period. But if either from the broken extremities not being in a state of rest—if they have been separated by a portion of the adjacent soft

parts intervening—or if, from some constitutional derangement, the ossific process has been disturbed, then the union becomes slow and tedious, and in some cases no union is ever formed, so that the fracture is converted into an artificial joint.

In these respects the phænomena observed during the reunion of bone resemble those which regulate the healing of all the soft parts; each of the soft textures, as the skin, cellular membrane, muscle, blood-vessel, or nerve, requiring after its disunion a determined period in order to reunite, whilst at the same time that period is subject to a variation, from the nature of the wound, and from peculiarities in the constitution of the individual.

Besides a languid and inert state of the constitution, which is sometimes observed preventing the union of a fractured bone, there are particular states of the system which seem to interrupt the formation of an ossific union. This is particularly remarkable in women who are pregnant, many instances having been observed of bones having been fractured during pregnancy, and never shewing any disposition to unite till after delivery. It is a fact no less curious, that there are some diseases during which, the osseous matter forming the union of a bone which had been fractured, is altogether absorbed, and the fracture remains ununited

till the disease subsides; after which a new bony union takes place. Two cases, the particulars of which are subsequently detailed, afford examples in illustration of this important fact, and several others are to be met with in the records of surgery. It has also been narrated on unquestionable authority, that, during long voyages, in seamen attacked with sea-scurvy, and who at some former period of their lives had a fractured bone, it became again flexible at the place where it had formerly been fractured, and did not reunite until the scorbutic affection was removed.

In considering the treatment of ununited fractures, the first object of inquiry is to find out the cause or causes which have prevented the natural process of union.

If from the history of the accident, the position of the fractured ends of the bone and the form of the limb, there be reason to suspect that the reunion has been prevented by a portion of muscle or other soft part having got between the ends of the bone, the only means of affording a chance of union, would be cutting through the integuments, removing the displaced soft parts, and placing the ends of the bone in accurate contact. They would then be under circumstances very similar to a recent compound fracture, and by a similar treatment a union might be completed.

When fractured bones have not united, either from a want of power in the system, or from being exposed to frequent motions, then the object of the surgeon is to produce an artificial inflammation of the contiguous soft parts. For in all cases of fracture, where the process goes on uninterrupted, the first change which takes place after the accident, is an inflammation of the soft parts adjacent to the broken extremities of the bone. There is subsequently a gelatinous effusion round the fracture, and in this substance, which afterwards consolidates acquiring a structure which has been generally denominated cartilaginous, the future osseous matter is deposited. When therefore the inflammation is not sufficiently severe, or when during its continuance the ossific process is interrupted by the motion of the limb, it has been found that by exciting a new inflammation, the reunion of a broken bone has been accomplished.

To produce this artificial inflammation several different modes have been successfully employed, whilst in some cases the most powerful of them have failed.

The application of repeated *blisters* on the skin over the fracture has been found extremely useful in accelerating the process of ossification, where it has been proceeding slowly, and it is a common and very successful practice with some

veterinary surgeons in fractures of the bones of horses.

Friction of the broken extremities of the bones is another method by which the union of some fractures has been accomplished, when a state of rest seemed insufficient to complete the process of reunion. The operation has been performed, either by grasping the two ends of the bone and rubbing them on one another, or by making the patient rest on the injured limb, after having secured it in splints, so as to make the ends of the bone be squeezed and rubbed against each other. This treatment is particularly applicable to those cases where the constitutional powers are languid, and where a slight stimulus is sufficient to promote the degree of inflammation necessary for a perfect ossific union. An instance came within my knowledge where this practice was accidentally adopted. A sailor broke his arm, and the bone shewed no disposition to unite until three weeks after the injury, when he happened to fall and severely bruise it; after which a rapid union took place.

Another method of curing ununited fractures, has been to cut down on the fractured ends of the bone, and then to irritate them or rasp off any cartilaginous covering they may have acquired.

But by far the most severe operation which has

ever been performed, is the complete removal of the fractured extremities, by cutting through the soft parts, and then sawing off the ends of the bone ; thus placing them in the situation of a recent compound fracture.

The two operations which have been last mentioned are not only tedious and difficult, particularly when performed on the larger bones, but they are attended with very considerable danger, and have in so many instances been unsuccessful, that they are now seldom attempted.

Neither are these operations applicable to all cases of ununited fracture. For when an osseous union has not been formed, the fractured bone may be in either of two very different states. The broken extremities are sometimes in contact, fastened together only by soft parts, and lubricated with a synovial fluid, so that in every respect they resemble a natural articulation ; or the fractured ends are more or less separated from one another, the intermediate space being filled up by a cartilaginous substance, throughout which bony nuclei are sometimes interspersed. In a fracture under circumstances, such as have been first mentioned, one or other of the operations might be adopted ; but in the latter state of the bones neither of them is admissible.

The difficulties, the danger, and the want of

success attending these operations, made the proposal of exciting a new inflammation in ununited fractures by the introduction of a *seton* between the extremities of the bone, likely to become a most important improvement in surgery. It is a method of cure applicable to all cases where any of the other operations could be advisable, and it affords a most simple mode, not only of exciting inflammation, but of at all times regulating that inflammation in such a manner as circumstances may require.

Surgery is indebted to Dr. Physic, of New York, for this ingenious operation; and in the first volume of the "Medical Repository*," he has given a detailed account of a fracture of the humerus, which not having united twenty months after the injury, he introduced a seton between the broken ends of the bone, and this practice was followed by a complete osseous union. The success of the operation in this instance, and the obvious advantages it has over all the former methods, induced me to adopt it in the following case of an ununited fracture of the thigh bone; and although the practice has not in this instance been so permanently successful as in the case narrated by Dr. Physic, yet it has appeared to me of sufficient importance to be communicated to this Society, as it is the first instance, so far as I know,

* See Medical Repository, vol. I. New York, 1804.

where the operation has been performed in this country; and as it may induce others to adopt a practice which is likely to be attended with much advantage.

CASE I.

In which a Seton was introduced between the Extremities of the Bone in an ununited Fracture.

During an engagement at sea, the commanding officer of the ship received a wound on the left thigh, from a large piece of plank which had been forced out of the ship's side by an eighteen pound shot. The thigh bone was fractured transversely about four inches below the great trochanter; there was a wound of the integuments somewhat larger than a crown piece, and the whole limb was very much bruised.

In this situation he was put into a swinging cot, and the limb placed on its side, supported by pillows. A considerable degree of fever ensued, but in seven or eight days a copious and healthy discharge took place from the wound. About a week after the suppuration had commenced, he was seized with a severe bowel complaint, which continued for several days, and during this time the limb was very often moved. The discharge continued healthy, and, in two months from the time of the accident, the wound of the soft parts

was completely healed. During this period it was dressed twice a day, which could never be accomplished without moving the limb and altering its position.

Though he remained in bed, yet when the limb was examined at Calcutta, three months after the accident, it was found that no osseous union of the fracture had taken place.

The surgeons, under whose care he was placed when at Calcutta, raised him from the horizontal posture, and whilst the weight of his body was resting on the sound limb, and the other hanging about two inches from the ground, to use his own expression, "it gave way." On the following morning, the thigh was firmly bandaged and secured in splints and a junk, with the leg resting on the heel. In nine days he was taken out of the junk, made to stand erect, and the foot of the fractured limb was supported. Adhesive plaster with compresses and a roller were now applied, and in ten days afterwards, when the limb was examined, no union of the bones had taken place. He was then desired to walk on crutches, and to move about as much as possible. From that period till I saw him in London, twenty months after the accident, no perceptible change had taken place in the state of the fracture.

When the limb was now examined, it appeared

at least four inches shorter than the other ; and its natural form was a good deal altered from the knee being turned outwards, and being rather less fleshy than the other. His whole body, however, was so corpulent, that it was not very easy to feel accurately the different processes of the bones. The upper portion of the femur could be traced below the rectus muscle to the fracture. It was very difficult to distinguish the inferior portion of the bone, from its being completely enveloped in soft parts, but the broken end could be felt overlapped and separated to a considerable distance from the superior portion. Between the two bones the parts were soft and yielding, so much so, that, by grasping the knee, the limb could be extended to very near its natural length, and the fractured ends of the bone made almost to approximate. The action of all the muscles below the fracture, except those attached to the leg and foot, was completely destroyed, so that the limb hung immoveable ; and when he went from place to place, he required assistance to guide his foot, over which he himself had not the smallest command. Neither could he in the least degree move the limb when in the horizontal posture ; so that he always required assistance to alter its position.

Treatment.

It has already been noticed, that the most frequent cause of a want of union in fractured bones, is an interruption to the process of ossification from the limb being exposed to motion. And there is no general doctrine better established in surgery, than the necessity of keeping a fractured bone in a perfect state of rest, until a re-union be completely established. In this case, the union of the femur appeared to have been prevented from the unavoidable motion to which the limb was exposed, both from the nature of the wound, and the situation of the patient; and no means had been adopted after the wound was healed, of keeping the limb in one position longer than a few days. It therefore appeared to me to be one of those cases, where by exciting a new inflammation around the fracture, and subsequently treating it as a recent injury, there was every chance of producing re-union: Dr. Physic's operation of introducing the seton between the ends of the bone, seemed particularly applicable in this case. For to saw off the ends of the bones, from the end of the inferior portion being so deeply imbedded in the soft parts, and so far separated from the other, would have been an impracticable operation, without previously dividing almost the whole muscles of the thigh; an operation which must have been attended with extreme danger both from the bulk of the soft parts in this patient, and from the irritable

nature of his constitution. Besides, as it was probable, that in this instance a portion of cartilage intended as the nucleus of future bone, was placed between the fractured ends of the femur, it was very practicable to introduce a seton between the ends of the bone, through the cartilage.

With Mr. Abernethy's concurrence, this practice was agreed upon, and I was much indebted to him not only for his suggestions in devising the means, but also for his able assistance during the performance of the operation.

Apparatus.

Before performing the operation, it was necessary that an apparatus should be in readiness to keep the limb in a state of perfect rest, and in that state of permanent extension, which the softness of the union admitted of. In order to accomplish these two objects, the apparatus of M. Dessault was employed with some slight alterations, as being by far the most simple and ingenious which has ever been contrived for this purpose*.

The apparatus consisted of three splints, with bandages to connect them to the limb and trunk of the body. A long firm splint (*A*) two inches and a half broad, extending from a little above the

* See plate.

spine of the femur to eight inches below the edge of the first, formed the chief part of the apparatus. The upper part of this splint (*a*) was fastened by a small pouch to a belt which passed between the thighs, and obliquely crossed the hip-joint (*a*), whilst a bandage placed round the foot, was attached to a perpendicular piece of wood (*b*) which projected from the under end of the splint. The limb was thus formed into one entire piece, and could be extended to any requisite degree by tightening either the upper (*a*) or inferior (*c*) belt.

The second splint reached from the upper and posterior part of the thigh, close to the heel, was about four inches in breadth, and a portion both of it and the first splint was cut out opposite to the fracture, of a sufficient size to allow the seton to be brought through the limb, and the wound to be dressed.

The third splint (*c*) covered the anterior portion of the thigh, and extended from the groin to the patella. The different parts of the apparatus being accurately adjusted, it was found that the limb could be extended to its natural length, and kept immoveable in that situation.



Operation.

After feeling accurately the broken end of the upper portion of the femur, I made an incision di-

rectly above it, cutting at once through the integuments and superincumbent soft parts down to the bone. This incision was about one inch and a half in length externally, and was about six inches below the anterior spinous process of the ileum, and towards the fibular edge of the rectus muscle. The fore-finger was introduced into this wound, and several loosely attached cellular bands could easily be torn from the end of the bone. A blunt-pointed bistoury was conducted along the finger to the bottom of the wound, and the soft parts were divided downwards so as to reach the inferior portion of the bone. Having accomplished this, I was able to feel that the broken extremities of the bone not only overlapped one another, but were separated to a considerable distance by an intervening substance which felt in tenacity and firmness like cartilage*. I now conducted along my finger the blunt sheath of the seton needle† to this cartilaginous substance, and having determined the place for the insertion of the seton, pushed forwards the cutting blade, and conducted the instrument downwards and outwards, through the middle of the thigh without meeting any interruption, and brought it out towards the dorsal edge of the external vastus muscle. When the point of the seton-needle reached the opposite side of the limb, a thick bundle of silk thread was passed through the eye of the cutting blade; and

* See plate, fig. 3.

† See fig. 2.

then the whole instrument was withdrawn backwards, leaving the silk within the wound.

The limb was now placed in the apparatus of splints, and before all the bandages were secured, a jet of arterial blood flowed from the upper wound. For about half an hour the blood was constantly absorbed by a sponge, but the stream not appearing to cease, some coagulated blood which filled and distended the wounds was removed. Finding that the blood flowed from a part deeply seated, I thrust my fore-finger into the wound, and after trying the effects of pressure on different parts, it was at last found that the hæmorrhage could be restrained, by holding firmly between the fore-finger and thumb the soft parts situated on the outside of the thigh. This pressure was continued without intermission during at least one hour, and after gradually diminishing it, the finger was cautiously withdrawn, and the wound covered. No blood escaped by the lower wound, from its being so completely plugged up by the chord. He remained very faint during several hours after the operation, but there was no return of the bleeding.

The thigh round the fracture soon after the operation began to swell, to become tender to the touch, and the wounds to suppurate; but such was the uneasiness created by the extension of the limb, that it was in the mean time desisted from,

and the leg and thigh merely kept in a straight line.

In eight days after the operation, suppuration had completely taken place, and the swelling around the wound begun to subside; at the same time, the accompanying febrile symptoms which had been pretty severe, became more moderate.

The last opportunity was now afforded of making use of the permanent extension, and placing the bones in the position where it was thought best for them to remain whilst an osseous union was going on. The apparatus for producing the permanent extension fulfilled its purpose completely; but such was the degree of pain created sometimes in the knee, and at another time in the foot, that he could not endure it above a few hours. These circumstances being considered, and also the probable difficulty in producing a change in the relative position of soft parts, which had been nineteen months accustomed to a particular situation, made all hopes be relinquished of lengthening the limb, and that nothing should be attempted but a reunion of the bones with the limb of the length and in the position it had assumed since the accident. The limb was accordingly placed immoveable in the apparatus of splints, and the bandages so contrived, that the wounds could daily be dressed without moving the limb.

On the evening of the tenth day after the operation, he had a feeling of distention around the wound, and on examining the limb some hours afterwards, a considerable quantity of blood was found to have escaped, both from the upper and lower wounds. When the dressings were removed, the hæmorrhage appeared to have ceased ; there was, however, a considerable degree of tumefaction of the soft parts contiguous to the upper wound which created a great deal of uneasiness.

The bleeding did not return, but the patient's mind continued in a state of great alarm ; and he suffered much from pain in the wound by the distention of the blood that had been extravasated. The discharge too became profuse, a considerable degree of an erisipelatous inflammation attacked the skin of the upper and posterior part of the limb, and he had a great degree of symptomatic fever, with a weak, irritable, and very frequent pulse. It was now twenty-one days since the operation was performed, and as the seton had produced to a full extent that degree of inflammation supposed necessary to excite an osseous union, and as the constitutional derangement was extremely severe, it was thought expedient to withdraw the seton. This was done without giving any pain, or producing any bleeding. In a few hours after the seton was withdrawn, all uneasiness in the wound and neighbouring parts went off ; the febrile symptoms abated, and on dressing the wound on

the following day, the discharge had diminished in quantity, and had become more consistent. A daily amendment continued; in five days the inferior wound was healed; the upper one filled up rapidly, and in a fortnight was completely cicatrized.

The limb was kept as quiet as possible, and on examining it about a month after the seton was withdrawn, (being seven weeks from the time of the operation,) a considerable degree of the swelling which had formed around the fractured bones remained, and had become hard and firm; and he felt as if he had acquired a power of moving the leg and foot. In two weeks more, this swelling had acquired additional firmness, and when all the bandages were removed, he could raise the knee a considerable distance from the pillow, and had the same feeling of strength in the limb, as if an osseous union had taken place.

At this period, without any evident cause he was seized with violent sickness, great prostration of strength, the pulse became quick and feeble; the tongue white, with excessive thirst. These symptoms were soon succeeded by an erisipelatous eruption on the limb, commencing adjacent to the fractured part, and spreading over the greater portion of the thigh. This attack lasted nearly three weeks, and at the expiration of this period, there was a manifest change in the swelling round the

fracture. It had become much softer, the bones admitted of some motion, and there was every reason to believe that there had been, during the febrile attack, a reabsorption of part of the bony union which had previously taken place.

The limb was replaced in the apparatus of splints, and on examining the fracture six weeks afterwards, a very considerable consolidation had taken place. He had all the feeling of strength in the limb, which indicates a union going on, and could raise the knee a little way from the splint.

A second attack in every respect resembling the former, except in an increase in its severity, now commenced. The febrile symptoms were excessively severe, and the erisipelatous inflammation spread not only over the thigh, but extended over the whole leg. The functions of the alimentary canal were much deranged; and from the sickness, the appearances of the alvine discharge, and his very sallow complexion, that derangement appeared to be chiefly produced from an affection of the biliary organs. This second attack was not only more severe than the preceding, but it was of much longer duration: for six weeks elapsed before he regained sufficient strength to admit of his being removed a few miles out of town, a step which was considered of great importance in order to recruit his general health.

When the limb was now examined, the same unfavourable change had taken place which had been the effect of the first attack ; for the union had become soft and flexible, and there was every reason to believe that nearly the whole of the newly deposited osseous matter had been reabsorbed.

With the hope that the process of ossification might again commence after the improvement of his general health, he was removed to the country, and the limb again placed in the apparatus of splints. He recovered his health daily, and in a few weeks it seemed perfectly re-established.

But the process of reunion of the fracture now became extremely slow, though the substance between the ends of the bone continued to increase in firmness. He continued to keep the limb at rest during nearly three months from the period of the last attack ; and this was ultimately fulfilled very completely by inclosing the thigh in a mould of paris-plaster ; a mode of securing fractures somewhat resembling that which is employed in India by the natives, and which under some circumstances may be found a useful practice. Though he now walked about, the limb continued to gain strength, and the union to become firmer ; and on comparing the state of it twelve months after the operation, to what it was previous, an evident amendment could be perceived. In place of the limb hanging pendulous and motionless, the

union had now acquired such firmness that he could move it backwards and forwards, and from side to side, so that it no longer prevented him from walking about freely, and he was enabled to guide it in walking on irregular ground, and in going up and down stairs. Though, therefore, the union did not acquire that solidity which made the limb useful as a prop to the body, yet this gentleman, from being nearly confined to the sitting and horizontal postures, is now enabled to take very considerable exercise by walking; and though at one period the effects of the operation were expected to have been much more complete, yet he considers the benefit which has been received from it sufficient to recompense him for its sufferings.

CASE II.

In which, after a fracture had been united, a reabsorption of the bone took place.

A sailor sixty-three years of age had his leg trampled on by a horse, which produced a compound fracture of both the bones, about four inches above the ankle joint, and bruised the soft parts. The bruised parts ulcerated, and as he was supposed to be of a scorbutic diathesis, particularly from the injured leg having been long affected with a disease of this kind, he was ordered bark, wine, and acids.

About four weeks after the accident, erisipelas

appeared on the foot, and rapidly extended over the leg and part of the thigh ; and on examining the fracture ten days after this attack, the callus was found to have become quite soft and dissolved. The inflammation and fever abated, in a few days the sores assumed a healthy appearance, and the ossific process was renewed. But in less than another month the *erisipelas* again made its appearance on the foot, the inflammation, pain and swelling became alarming, the sores assumed an unhealthy aspect, and in a few days from the commencement of this attack the callus was again dissolved. By the judicious use of acids, opiates, a generous diet and wine, the general health was restored, the sores were healing, and the process of ossification again commenced, and the callus was forming luxuriantly.

In six weeks from this period the *erisipelas* made its appearance for the third time, but it was not so violent as on either of the former occasions. The fracture, however, was again disunited, and it remained in that state nearly three weeks. By the internal use of the *digitalis* and submuriate of quicksilver, the patient's constitution was greatly invigorated, and the process of reunion again began. But it went on so slowly that twelve months elapsed before the limb became strong enough to support the body, and when the union of the fracture was completed, the leg had a very unseemly appearance.

For the particulars of this case I am indebted to Dr. Johnstone, of Dunbar, under whose care the patient had been.

These two cases have a striking resemblance to each other, not only from peculiar circumstances having occurred in two seafaring men, but because in each there was a reabsorption of the osseous union of a fracture, in the first, twice, and the second, three times, during successive attacks of erisipelas.

CASE III.

In which an un-united fracture was cured by the introduction of a seton.

As the work in which Dr. Physic's case of un-united fracture is published, is not in general circulation in this country, I shall subjoin an account of it, as it shews in a most satisfactory manner, the benefit which under favourable circumstances may be derived from the use of the seton.

“ A seaman twenty-eight years of age, applied to me in May 1802, in consequence of a fracture of his left arm, above the elbow-joint, which had taken place several months before; but the ends of the bone not having united, his arm was rendered useless. The history he gave was, that on the 11th of April 1801, after having been at sea seven months, his arm was fractured, by a heavy sea

breaking over the ship. Nothing was done for his relief until next day, when the captain and mate bound it up and applied splints over it. No swelling supervened, nor did he suffer any pain. Three weeks after this accident, he arrived at Alexandria, when the state of the arm was examined and considered not to be in a proper position. After making an extension, the splints and bandages were again applied. He remained in Alexandria four months, when finding his arm stronger he left off all the dressings, and went on board the New York frigate, as steward. In this capacity he remained near the federal city six months, and by being under the necessity of using his arm as much as possible, he found the connection between the ends of the bones had become looser and looser, till at length the arm bent as easily as if a new joint had been formed at the place of the fracture. From the frigate he went to Baltimore, where an attempt was made by machinery to extend the arm, and keep the ends of the bone in apposition by continuing the extension. Under this treatment he remained two months, but experiencing no benefit he was advised to come to Philadelphia.

“ On examining the arm, I found the humerus had been fractured about two inches and a half above the elbow-joint, and that the ends of the bone had passed each other, about an inch: the lower fragment, or that nearest the elbow, was situated over, and on the outside of the upper por-

tion of the bone. The connection which subsisted between the ends of the humerus was so flexible, as to allow of motion in every direction, and by forcible extension the lower end might be pulled down considerably, but never so low as to be on a line with the end of the upper extremity. He was admitted into the Pennsylvania hospital the latter end of May; but the weather becoming very hot, it was judged best to defer any operation that might be necessary, until the fall of the year. Unfortunately he then contracted a bilious fever, of which he was so ill, that his life was despaired of for some days. From this fever his recovery was so slow, that it was not thought proper to perform any operation until December. It still remained to decide, by what means a bony union of the humerus might most probably be effected. In the year 1785, when a student, I had seen a case in our hospital similar to this in every essential circumstance, in which an incision was made down to the extremities of the fractured bone, which were then sawed off, thereby putting the parts into the condition of a recent compound fracture. No benefit, however, was derived from this painful operation, and some months afterwards the arm was amputated. This case had made a strong impression on my mind, and rendered me unwilling to perform a similar operation. I therefore proposed to some of the medical gentlemen of the hospital, who attended in consultation, that a seton-needle, armed with a skein of silk, should be

passed through the arm and between the fractured extremities of the bone, and that the seton should be left in this situation, until, by exciting inflammation and suppuration, granulations should rise on the ends of the bone, which uniting and afterwards ossifying would form the bony union which was wanting. This operation being agreed to, it was performed on the 18th of December 1802, twenty months after the accident happened.

“ Before passing the needle, I desired the assistants to make some extension of the arm, in order that the seton might be introduced as much as possible between the ends of the bone. Some lint and a pledget were applied to the orifices made by the seton-needle and secured by a roller. The patient suffered very little pain from the operation. After a few days the inflammation (which was not greater than what is commonly excited by a similar operation through the flesh in any other part) was succeeded by a moderate suppuration. The arm was now again extended, and splints applied. The dressings were renewed daily for twelve weeks, during which time no amendment was perceived; but soon afterwards the bending of the arm at the fracture was observed to be not so easy as it had been, and the patient complained of much more pain than usual, whenever an attempt was made to bind it at that place. From this time, the formation of the new bony union went on rapidly, and on the 4th of May, 1803, was so perfectly com-

pleted, that the patient could move his arm in all directions, as well as before the accident happened. The seton was now removed, and the small sores occasioned by it healed up entirely in a few days. On the 28th of May 1803, he was discharged from the hospital perfectly well, and he has since repeatedly told me that his arm is as strong as it ever was."

EXPLANATION OF THE PLATE.

Fig. I. This figure represents the limb put in the apparatus.

A. A. The external splint.

a. a. The belt passing obliquely between the thighs, and fastened with a pouch to the upper end of the splint.

B. B. A bandage passing round the body intended to secure this splint against the pelvis.

b. A piece of wood projecting perpendicularly from the inferior end of the splint, to which is fixed the bandage which secures the foot, for the extension.

c. c. c. The anterior splint reaching to the knee.

d. d. d. The circular roller passed round the whole limb.

e. e. e. e. e. The cloth in which the inferior and internal splints were folded.

f. A narrow bandage to prevent the bandage (B) from slipping upwards.

Fig. II. This figure represents the seton needle. It consists of two blades, the one blunt and the other sharp pointed.

The blunt one (a) is fixed to the handle (b), whilst the sharp blade (c) can be pushed forwards by pressing its end (d), beyond the blunt one, and in that situation it may be fixed by the screw (e); (f) is the opening in the sharp blade through which the silk is to be passed.

Fig. III. This figure is a plan of the situation of the bones in *Case I.* The broken ends are represented at a considerable distance from one another, and the dotted lines represent the intervening cartilage in the middle of which (a) the seton was introduced.

ADDITION TO THE FOREGOING PAPER.

By B. C. BRODIE, Esq. F.R.S. &c.

THERE is reason to hope, that the simple and ingenious method of treatment proposed by Dr. Physick, of Philadelphia, for the purpose of effecting the union of ununited fractures, will prove a considerable improvement in the surgical art. It remains, however, to be ascertained, whether the treatment alluded to, is, or is not applicable to all cases indiscriminately, and what are the circumstances to which the attention of the surgeon should be particularly directed, as calculated to ensure its success, or lessen the probability of its failure. In the present state of our knowledge, it seems desirable, that some of those, to whom an opportunity occurs of adopting this practice, should record the results of their experience, and hence I am induced to communicate to the Society the following account of a case, which came under my care some time since in St. George's Hospital.

John Verrall, a boy between 12 and 13 years of age, residing in the country, had both his thighs fractured by the wheel of a waggon passing over them on the 30th of December, 1812. The left thigh was fractured in two places: union took place at the end of the usual period. The right

thigh was fractured in one place, about the middle of the bone. It was supported by splints in the usual way, but the fractured bones did not become united. The boy was kept in bed from the day of the accident, to that of his admission into the hospital on the 2d of June following.

At this time the right thigh was somewhat shortened, the upper fractured end of the bone overlapping the lower; and the two portions of bone were very moveable on each other. In other respects the boy was in good health.

On the 14th of June, having first made a small incision of the skin on the inside of the thigh, I passed, by means of a long seton needle, a skein of waxed silk, between the two ends of the bone. The needle met with so little resistance, that I was led to conclude that there was no union even by soft substance, but that there was a complete artificial joint. After the operation, there was a good deal of pain in the thigh, which however subsided in a few hours.

No considerable inflammation followed the introduction of the seton. The boy was kept in bed, the limb being laid on a pillow till the 25th of June, when a splint was applied on each side, and he began to walk on crutches.

At the end of a month from the time of the operation, a good deal of soft union had taken

place. On the 2d of August, the union was more complete ; and the splints were left off. On the 10th of August, he was able to walk with only a single crutch, and to press with considerable weight on the foot of that side.

On the 30th of August, an attack of erysipelas took place, beginning at the wounds made by the seton, and extending over a great part of that limb. The seton was withdrawn.

It was now necessary again to confine him to his bed. The erysipelas subsided, but left him much debilitated; so that he made no more attempts to walk while he remained in the hospital. On the 20th of September he returned into the country, as a better air appeared to be necessary for the recovery of his health. At this time the fracture was firmly united, but on minute examination a very slight degree of yielding motion was perceptible between the two bones, as if the uniting substance was not completely ossified.

From this time, I had no opportunity of hearing of my patient, till the present summer (1814), when Mr. Lucas, a very intelligent gentleman, who had watched the progress of the case, while a student at the hospital, and on whose observations I can perfectly rely, had an opportunity of seeing him in the place where he resided ; and from him I received the following account.

After his return into the country, the boy was able to walk about very well ; but being naturally timid, and also being much depressed by his long illness, he never attempted to walk without the assistance of a stick.

During the unusually severe weather which began immediately after Christmas, he was seized with a violent rheumatic fever, which confined him to his bed for a considerable time, and left him with contractions of his lower limbs.

At the time when Mr. Lucas saw him, in July of the present year (1814), he was lame from the cause just mentioned, but on examining the right thigh no motion whatever could be perceived between the two ends of the bone, which were evidently firmly consolidated by bony union.

We learn from this case, that the operation proposed by Dr. Physick, may be practised with safety and success in the thigh, as well as in the arm. It must be owned, however, that the youth of the patient placed him under more favourable circumstances, than if he had been a person advanced in life : I have lately had an opportunity of performing the same operation on a man 30 years of age, with an ununited fracture of the thigh ; but sufficient progress has not yet been made towards a cure to enable me to lay the history of his case before the Society.

FURTHER
OBSERVATIONS

ON THE
CATARACT.

BY BENJAMIN TRAVERS, Esq.

DEMONSTRATOR OF ANATOMY AT GUY'S HOSPITAL;
SURGEON TO THE HON. EAST INDIA COMPANY;
AND THE LONDON INFIRMARY, FOR DISEASES OF THE EYE.

IN the paper which I had last year the honour of reading to the Society, I attempted to convey an idea of certain appearances by which the various textures of cataracts might be distinguished, and which appeared to me to afford juster indications than could otherwise be obtained, of the modes of operation which they respectively require. The present communication contains the further results of my observation on this subject.

The classification of the different species of lenticular cataract which I have ventured to suggest, is to be understood as general, comprehending of course their intermediate degrees of consistency. The fluid cataract, for example, upon rending its

capsule, is sometimes readily diffused in the aqueous humor, so as to render it uniformly milky—at other times it is viscid and oily, and sinks to the bottom of the chamber, resembling the onyx of lymph or pus in appearance. The gradations of consistency between this and the state of flocculency are less obvious, although their existence is not less certain. The caseous species comprehends, under the description of its characters formerly given, a range of considerable extent, from the softness of the flocculent to a degree of firmness approaching that of the hard cataract. The former has the permeability to the needle and the facility of dissolution of the flocculent cataract, without its symmetrical, or its fanciful cloud-like arrangement; the latter has a gum-like tenacity and incompressibility, upon which the needle makes but a superficial impression, and which renders it incapable of a change of figure, although it wants the colour and seeming compactness of that which I have denominated ‘the hard cataract.’ These therefore I have regarded as the extremes of the caseous species. The appearances which they present differ according to the density of the opacity, which depends on their respective volume and texture. The best marks of discrimination, with which I am acquainted, are a uniform bright or luminous whiteness, and looseness or sponginess of texture, as indicating softness; and a dull white or bluish grey tint with a more condensed and less voluminous texture, the opposite state. There is an ap-

pearance of radii, corresponding to the segments into which the lens separates by maceration or compression, characteristic of the firm caseous cataract. These radii look like membranous bands passing at equal distances from the centre to the circumference of the lens. They are sometimes faintly marked, but always distinguishable when present, from their superficial and glistening appearance. They are hence generally supposed to be capsular, but the capsule is uniformly transparent, and the cataract firm.

That a practical value attaches to these distinctions in selecting, and in the mode of conducting the operation may be easily shewn, and my more matured experience has fully convinced me of their importance. In those of the fluid and flocculent character the diversity is insufficient to influence the mode of operating, and probably too minute to be ascertained by previous inspection; and I am not aware that any advantage could be derived in the treatment of hard cataracts from a knowledge of their degree of hardness. But in attempting to couch the softer caseous cataract, the surgeon will find it break into pieces under the pressure of his needle; while acting upon the firmer kind, his needle will sooner dislocate than divide it. This, it may be said, offers an alternative of which equal advantage can be taken at the moment as by predetermination; for if the cataract prove soft, it may be broken up for absorp-

tion; if hard, the couching will be more easily effected. And this argument has been urged in preference of the operation with the needle over that with the knife, but it has been dictated by the necessity of the case, not by the judgment of the surgeon. I reply to it, 1st, That an unprepared state of mind, one that is undetermined which of two things it shall do, is the worst possible state for commencing an operation; for neither is done well, owing to an indecision which is the result of embarrassment between the two. 2d, That it is a severe disappointment to a patient to find, that in place of one he requires two operations, for the volume of the soft caseous cataract will require at the least two, and that he is to remain in darkness until the process of solution is effected; or on the other hand, though he receives light sooner than he expected, yet that it is succeeded by a severer inflammation, and a less perfect vision than he had been led to expect. I have myself caused such disappointments from mistaking the texture of the cataract, and have known patients who had made up their minds to one mode of operation, seriously regret that the other was adopted. The last and most important objection will be best understood when I have described the operations most applicable to the cases respectively. It will be at once admitted by those who agree with me, that a better operation than any with the needle is appropriate to one, if not to both cases; that the residence of the lens in the eye after its dislocation

is an operation of all the most objectionable—destructive to the health and usefulness of the organ.

There is yet a description of lenticular cataract of too frequent occurrence to pass unnoticed, and which I shall call “the mixed cataract.” I formerly adverted to the combination of a fluid superficies with a caseous bed. Of this I have since seen several examples, and the instance of a caseous superficies covering a hard nucleus is yet more frequent. Wherever the centre of the lens has a tinge of colour, it is, according to my experience, a firm nucleus. It is faintly indicated, and discernible only on close inspection in different lights. It is discriminated from the hard cataract by its circumscribed extent and its obscurity, the surface through which it is seen presenting the general character of the caseous cataract.

A similar reasoning to that before employed is applicable here, and discovers the importance of ascertaining the existence of the mixed cataract before proceeding to the operation. The disappointment of the surgeon upon finding, after evacuating the fluid in one case, and breaking up the soft superficial lamellæ in the other, that much yet remains to be done, is not the greatest evil. The solid portion of lens, being unsupported by its capsule, advances, and a very serious and protracted inflammation results from its permanent pressure upon the margin of the pupil.

It has been a very general opinion among oculists, that the texture of the cataract is originally soft, and undergoes a progressive change from soft to hard. I am at a loss to conceive from what circumstances this opinion took its rise, unless from the observation that the texture of the cataract was different in persons of different ages.

The cataracts of infants and children are either fluid or flocculent ; of young adults, usually of a flocculent or soft caseous consistence ; of old persons, more frequently firm caseous, or hard. Analogous to this is our observation of the texture of the healthy lens, which is semi-fluid in children, jelly-like in adults, and gum-like in old age. But is it to be supposed, that the progressive changes which accompany a state of organization and exercise, equally take place in the state of disorganization and disuse ? I have operated on several congenital cataracts in adults, and have uniformly found them either fluid or flocculent.

The mixed cataract might possibly have suggested the opinion, that the cataract was in progress from soft to hard ; but the same local relation of soft to hard is uniformly observed between the circumference and the centre of the healthy lens. I have never met with a soft nucleus covered by firm lamellæ.

The central opacity with a transparent circumference may have given or strengthened the impression ; but the frequency of these cataracts in persons who, owing to the slight interruption which they give to vision, are ignorant of their existence until accidentally discovered, and their absolutely stationary character, lead me to the belief that they are congenital, and remain in the same state during life. Such persons have clear vision around the central spot. But persons in whom the disease is progressive, see through a mist, which they complain becomes more and more dense, before any opacity is distinctly visible. In a word, the consistency of the opaque lens, or portion of lens, does not admit of change when the opacity is once established. Whether fluid, or soft, or hard, it remains unchanged. If it originally affects only the nucleus of the lens, the circumference continues transparent *. This I imagine is referable to its peculiar texture.

* The opinion that a distinct nucleated cataract is progressive has been, and is a source of serious mischief. The patient who reads his newspaper with the aid of glasses, and can bring down his bird at the distance of fifty or sixty yards, is rendered miserable by the assurance that he will be shortly blind, unless he submits to an operation. I am not stating an imaginary case. One gentleman who did me the honour to consult me in this state, neglected my advice, and has since felt a bitter sense of its value. Another has resisted the most urgent solicitations to submit to an operation. Without imputing to operators in these cases any unworthy motive, I intreat them to reflect upon their proceeding, and examine the evidence for their opinions.

In general, at whatever period of life a cataract appears, it most nearly resembles the character in form and consistence proper to the healthy lens at that period. The doctrine of a progressive increase of consistency in lenticular cataracts, coupled with the inapplicability of couching or extraction to the soft cataract, has tended greatly to the prejudice of individuals afflicted with the disease. I have met with several unfortunate persons who have been kept in a state of blindness for years, under the expectation that their cataracts, supposed soft, would become *ripe*, (hard) and fit for an operation; which, until that change had taken place, was deemed unadvisable. ‘*Rusticus expectat dum defluat amnis.*’

In the operation of couching, the lens is completely dislodged from the circle of the pupil posterior to the iris, for which purpose it is necessary that it should break and occupy a space in the vitreous body. If the cataract is of the firm caseous or hard kind, it may be depressed entire; but the capsule should be rent by the depression of the lens, that the latter may be sufficiently supported to preserve its direction as it descends; for if the capsule be lacerated by the needle in front of the lens, before the act of couching is commenced, the lens is unsteady and apt to revolve, and thus evade the needle. It frequently happens that some of the external lamellæ of the lens shell

off in the couching ; these should be dispersed before the needle is withdrawn. Upon remitting the pressure in order to disengage the needle, it often happens that the cataract rises ; in this case it should be again depressed by a motion of the needle somewhat abrupt, so as to hitch it in the breach of the vitreous cells. In this operation the eye is left in a state to appearance more perfect than in any which is succeeded by the instant admission of light. There is no wound of the transparent part, no sensible escape of aqueous humor, and if the cataract is depressed *en masse*, the pupil is clear, though somewhat smaller than before. The vision enjoyed at the moment is likewise more perfect, than where the humor has been entirely discharged and the cornea is wrinkled ; and the demonstration of it more satisfactory, as the experiment of opening and directing the eye may be made without risk. For these reasons this operation has always been a favourite with itinerant oculists. An opaque capsule is more favourable for this operation than one that is transparent : first, because the operator sees at once the whole extent of the disease with which he has to contend ; and secondly, because the lens is uniformly opaque, and commonly reduced in bulk, if the cataract is of long standing. The transparent capsule more readily lacerates ; but as it is highly elastic in its texture, a less extent of laceration suffices for the escape of the lens, and the extent of the laceration is not distinctly ascertained ; so

that a considerable portion of it may remain within the area of the pupil, in a day or two afterwards become visible from its opacity, and ultimately occasion a necessity for a second operation. Besides, where the capsule is transparent, the external lamellæ of the lens are often in the same state, so that the pupil is loaded with fragments after the opaque portion has been depressed. These, however, as well as detached portions of capsule, are soon removed by absorption. A uniformly soft cataract, whether caseous or flocculent, cannot be couched; and although the nucleus of the mixed cataract may be depressed, the superjacent lamellæ will rise in the pupil and must be absorbed.

I have frequently performed this operation, and although my experience does not permit me to doubt that it is sometimes succeeded by useful vision, the same source of observation compels me to remark that the serious and lasting injury which the organ suffers, where the operation is satisfactorily completed, induces for the most part a slow but destructive inflammation, characterised by a tumid state of the palpebræ, a phlogosis and serous weeping of the conjunctiva, an immoveable and contracted pupil, muddiness of the humours, discoloration of the sclerotic towards its junction with the cornea, a periodical heavy pain in the region of the orbit, and a distressing sense of weakness in the organ. These symptoms are accompanied and succeeded by a dimness of vision very imper-

fectly relieved by glasses. In short the condition of the eye, after the couching of an entire cataract, is too often that of a stationary imperfect amaurosis, the result of obstructed circulation and partial disorganization of the globe. This description will not be confounded with that of the acute inflammation, which directly supervenes upon most injuries inflicted by operation or accident. This I have seldom observed as a consequence of couching. On the contrary, the first few days are generally the best. The inflammation is comparatively slow in its accession as well as in its progress. I believe it results from the impediment to the internal or ciliary circulation, which the pressure of the dislocated lens creates. At least, I have repeatedly noticed the analogy between the morbid state of the eye produced by dislocation of the firm lens, whether accidentally in attempts to break down its structure, or designedly as in couching, whether its position be anterior or posterior to the iris. The choroid, and ciliary body, and iris, are the seat of the inflammation. When the lens, however bulky or firm in consistence, is extracted after its complete dislocation, no such inflammation ever ensues. When in process of time the lens, favourably placed for solution, disappears, the organ recovers, though always slowly and imperfectly. The same process, which, during the pressure of the lens upon the iris, is visible to us—the effusion of lymph thickening and agglutinating its compressed fibres, and

the deep discoloration of the sclerotic at its margin from the distension, or actual enlargement, and more abundant inosculation of the ciliary with the sclerotic and conjunctival orders of vessels—may afford us some idea of the effect of pressure and disturbed circulation in the choroid texture, and a probable explanation of the hidden mischief frequently done in couching.

But if we consider for a moment the theory of the operation, what more fortunate result are we entitled to expect from it? It would be a contradiction to all established principles in pathology to expect, that the opaque crystalline could be wedged in the substance of the vitreous humor, and the organ recover its health. For the lens, though dislodged from its capsule, being unexposed to the aqueous humor, does not at once undergo absorption, but remains of permanent form and bulk in the bottom of the globe; where, after the vitreous humor has become partially absorbed and obliterated by its residence, it may sometimes be seen, floating behind the inferior border of the pupil. In horses, the depression of the lens is by no means unfrequent, whether caused by a blow dislodging the transparent lens, or by a process of absorption consequent to its opacity. However the case happens, the eye looks shrunk and wasted; a considerable interstitial absorption of the vitreous humor is found to have taken place, and other

marks of disorganization usually appear. The animal is in this state as permanently blind, as if the cataract occupied the area of the pupil. In a word, the principle of removing a part no longer useful, is for obvious reasons more eligible than that which suffers it to remain at the expense of other textures. And the hazard attending extraction, cautiously performed, does not in my opinion counterbalance the certainty of partial disorganization induced by couching*.

The extraction of the solid cataract, it can never be questioned, is, *cæteris paribus*, greatly preferable to its solution *in situ*. The former is effected by a single operation, the latter by a series; and the necessity of repeating an operation is an objection so weighty, as no equivalent short of unconditional security opposed to imminent hazard can reconcile; it must be always more or less permanently injurious to the organ. But on the other hand, the section of the cornea, to the extent of half its circumference, is an operation of the greatest possible delicacy, and in every stage of the treatment, so many unlooked for circumstances may, and oc-

* A method of couching by passing the needle through the inferior margin of the cornea, has lately been practised by M. Langenbeck, Professor of Surgery at Gottingen, as I am informed by Dr. Mühry, Physician to the King at the Court of Hanover. I regard the operation as radically wrong in principle, and shall therefore be excused from a discussion of the merits of this, or any other mode of performing it.

asionally do arise to baffle the intention of the surgeon, and expose the organ to irretrievable injury, that we cannot be surprised at the disposition evinced by men of honest minds and mature experience, to seek a substitute for the precarious advantages of dispatch and brilliancy of effect, in measures of slowness and safety.

Circumstances unfavourable to the operation of extraction are occasionally combined with forms of cataract, to which it is otherwise well adapted. One of the most formidable of these, as it appeared to me when I commenced the practice, was the convexity of the iris, and consequent narrowness of the anterior chamber, where the lens was bulky and of firm consistence. It is evident, that this figure of the iris will either materially limit the section of the cornea, or expose the iris to be wounded in the section. Frequently meeting with this difficulty, induced me to vary the mode of operating thus:—I first employed the belladonna to dilate the pupil, and then introducing a small spear-shaped needle behind the iris, I slit the capsule down the front of the lens perpendicularly, and repressed with my needle the superior margin of the lens, by which pressure its inferior margin was raised, and easily tilted over the edge of the dilated pupil, into the anterior chamber; here I left it resting against the cornea, and withdrew my needle. The eye was then closed, and a napkin thrown over it. After a minute or two, the upper

did was gently raised, and I made my section boldly upon the lens, in conformity to the surgical practice of cutting upon an extraneous body, previously secured. By the interposition of the lens, the iris was effectually protected, and the cataract readily escaped as soon as the section was completed. This operation, which it will be seen differs from that of extraction as hitherto done, chiefly in having its stages reversed, I performed several times without difficulty, and with good success: the patients had no more than ordinary inflammation, and recovered excellent vision*. But in the progress of my experience, I found the pupil vary in its extent of dilatation under the influence of belladonna, and where the external lamellæ of the opaque lens were soft, as in the mixed cataract, I found them separate under the pressure of the needle, which increased the difficulty of throwing the nucleus, as it sunk away from the pupil, into the anterior chamber. To remove the fragments of the cataract, it appeared superfluous to make the entire section of the cornea; I therefore carried the knife only half across the chamber, and withdrew it. The fragments floating in the aqueous humor, were at once evacuated with it, and upon introducing the scoop, and gently depressing the outer margin of the pupil with the back of it, the re-

* I have a well written letter full of gratitude, from one of these patients, a man between sixty and seventy, now before me, on both of whose eyes the operation was done in this way a twelvemonth ago.

maining portion was readily conducted along its groove, as the contents of an abscess follow the director. The success of this operation obtained more than once under circumstances nearly similar, the clearness of the pupil, and the perfect state of the iris, furnished a suggestion not to be overlooked, and led to what I am disposed to regard a material improvement in the operation for soft cataracts. I began my operation, having previously dilated the pupil, by the quarter section of the cornea, dipping the point of the knife into the pupil, and freely lacerating the capsule before withdrawing it. The fluid cataract was instantly evacuated with the aqueous humor. The flocculent cataract frequently passed out entire, taking an oblong shape, and the soft caseous cataract piecemeal, through the hollow of the scoop, on gently depressing the margin of the pupil and sclerotic.

If the pieces were not all evacuated, the introduction of the capsule needle was found sufficient to clear the pupil, or they disappeared in a few days by absorption. The operation may be performed experimentally on the dead eye, and will be found to admit of the easy escape of the lens piecemeal.

One advantage of this operation over that which invites the solution of the cataract is too obvious to require pointing out. Such an operation effects the object which on an average requires two or even three of the latter. Its greater simplicity, and su-

perior safety to that of extraction as commonly performed, appeared to me so decided, that I anxiously endeavoured to substitute it in cases of hard cataract. The first stage of the operation in this case consisted in dividing the lens by the needle introduced through the sclerotic tunic. The second, after a pause of two or three minutes, of the section of the cornea to the extent required for the extrication of the fragments by the scoop, which was introduced with its back to the iris, and very gently pressed upon the outer margin of the pupil. I soon found, however, that the firm lens could not be reduced to fragments, without a greater exertion of force, and the continuance of it for a longer time, than was consistent with the safety of the organ; and being inelastic, that it would not in any degree alter and accommodate its figure, and therefore required a section somewhat exceeding in extent its greatest diameter. And though the use of a larger and more powerful instrument might enable the operator to cut it in pieces—not to speak of the extent of injury which the use of such an instrument inflicts—the complete escape of the aqueous humor which follows its removal, and the consequent collapse of the cornea and iris, render the section of the former impracticable. Even if this were not the case, if the firm cataract were divided and subdivided, I greatly doubt if the pieces of a lens of this consistence could be extracted with facility through a simple incision of the cornea; and with the opera-

to any which it is removed entire, **this would certainly be a want of comparison.**

The operation which I have described is **similar** to that performed and recommended in **cases of soft cataracts**, by the late ingenious **Mr. Gibson**, of Manchester; whose death, like that of all young men,udent and able to improve their opportunities of information, must be regarded as a serious public calamity. Mr. Gibson's proposal was to extract the soft cataract through a large puncture or small incision of the cornea, having broken it in pieces by a former operation with the needle. But I do not find this previous measure necessary. This texture of cataract yields at once to the point of the lancet or the emmet. I have detailed the process of observation, by which I arrived at the operation, and had not recollect'd until reminded by a friend, that a different plan had been adopted by Mr. Gibson. I am very happy to do him the justice which every body owes, and am every way oblig'd to him, as well as to our observations, which, though made at such other, they are not without some resemblances. I have performed this operation several times upon infants, and always with perfect success and **unadhering**. I am sensible, however, that it may be not very unnecessary to be cautious (and I am sensible) to prefer the operation which I have here is transparent, and does not seem to be likely of a consistence either as to the whole and complete dissection, and the

operation with the needle passed through the cornea performed by the late Mr. Saunders, is, if properly executed, unexceptionable. I admit that in this operation, there is less risk of injuring the iris, and deforming the pupil by adhesions. The needle is likewise a more convenient instrument than the knife for the free laceration of the capsule.

Where the contents of a transparent capsule are evacuated by an aperture of insufficient extent, as for example, a puncture, the membranous cataract which supervenes is very difficult of cure. The capsule heals, becomes adherent to the iris, and acquires a toughness which resists the needle. The iris yields to the pressure of the needle upon the capsule, and increases the difficulty. In such a case the operator should work at the centre of the membrane, and not attempt to break down the adhesions for the purpose of removing it entire. But by the completion of the capsular aperture in the first operation, the occurrence of a membranous cataract is effectually prevented.

Where the quarter section is performed, the knife should be carried somewhat obliquely through the lamellæ of the cornea, *i. e.* its point should be inclined to the pupil as it enters, and should be withdrawn gradually, not hastily, after the capsule has been rent: but the operator should not begin to withdraw it until this object is accomplished. By these precautions the aqueous humor is retained, and the pupil preserves its dilatation, till

the cataract is set at liberty; and the prolapsus iridis, which in neglect of them will sometimes occur, is effectually prevented. Where the capsule is opake, it generally escapes with the lens, and not a vestige of it can be seen within the pupil. In operating upon the adult after this manner, the surgeon should be careful to ascertain that the cataract is either fluid, flocculent, or of the softest caseous kind. If he should find that he has mistaken a firm for a soft cataract, the section of the cornea must be completed. The point of the knife should not penetrate the cornea at a less distance than one line from its margin, in any operation for which it is used*. If the iris should prolapse, it must be gently replaced with the back of the scoop. This may be done, if unfortunately it has not been sooner discovered, even as late as three or four days after the operation, as the adhesions are recent, and will yield to gentle pressure; upon the evacuation of the aqueous humor, the iris resumes and retains its place. But if the iris prolapses after the patient is bandaged, and put to bed, it takes place during the period of the secretion of the aqueous humor, being caused by the accumulation of this fluid behind it, which protrudes its overstretched fibres in the form of a little sac or bag between the lips of the wound, before the process of union is completed.

As it is of importance to the recovery of the

* The disposition to prolapsus iridis is increased, if not induced, by carrying the section too near to the margin of the cornea, by which its basis is deprived of support.

pupil, as well as the healing of the wound, and the prevention of an acute inflammation, from the irritation which this protrusion causes, that it should be as early as possible replaced, I never permit the eye, in which from any cause the iris has prolapsed at the time of the operation, to remain unexamined on the second day, by which time the humor is secreted, for the purpose of ascertaining that the pupil is shapely, and the cornea healing. No evil results from this examination; but as the accident is liable to occur in this interval, and cannot be redressed with equal ease or advantage at a later period, if at all, it should in no case be omitted.

I embrace the opportunity which this paper presents, of making a few remarks on the operation of extraction, as applicable to cataracts of firm consistence, in the hope that they may be useful to those who undertake it. It is quite unnecessary to offer a systematic description of its stages, after the copious and valuable instructions which the profession have received upon the subject from Richter, the Wenzels, and Mr. Ware. To convey an idea of the importance of performing this operation in that manner which admits of the removal of the cataract with facility, I need only remark, that I have never seen any extraordinary or untoward inflammation ensue, where the operation was so conducted. On the other hand, that I have scarcely ever known an instance of difficulty in

the removal of the lens, in which the object of the operation was not in a great degree frustrated, or which was not succeeded by considerable inflammation, and consequent disorganization and deformity. The result being thus influenced by the circumstances of the operation, it becomes important to know from what cause the extraction is rendered difficult, and what the ill consequences are of which it is productive.

The cause of difficult extraction is an insufficient section of the cornea; the ill effect of it is the implication of the iris in the wound. I was formerly at a loss to know, why after a tolerably well formed section of the cornea, and a sufficient aperture of the capsule, the lens shewed no disposition to advance, upon applying a moderate pressure to the globe. By increasing the pressure in such a case, I found that the capsule of the vitreous humor yielded, and a portion of that humor escaped; the cataract having lost its support, sunk away from the pupil, and every introduction of the curette, hook, or scoop, increased the discharge. At other times, the lens advanced upon pressure of the globe, as it were reluctantly, became wedged in the section of the cornea, and was, by the continuance of the pressure, gradually but difficultly squeezed out.

In the first of these cases the section was not only not of extent sufficient for the mechanical expression of the lens, but the divided portion of

cornea formed so small a part of its circumference, that its resistance was but slightly diminished, and except that the aqueous humor was evacuated, it in effect retained its integrity. In the second case the lens advanced, because this resistance was either greatly diminished or taken away, although the section was demonstrated to be barely sufficient for the escape of the lens. When I speak of the resistance of the cornea to the escape of the lens, I refer to its figure and its relation to the pupil through which the lens is to pass. It will be understood by observing the difference of effect produced by sections of the cornea, of the same extent, opposite to and at the greatest distance from the pupil. It is evident, that the situation of the section will be more favourable to the escape of the lens, the nearer it approaches to the pupil. I have seen some dexterous operators perform a straight section which just cleared the inferior margin of the pupil. Now if a crescentic section of the same extent were made at the inferior margin of the cornea, the extraction of the cataract could not be accomplished. The cornea being in the former case divided at its greatest diameter, its resistance is taken off, and therefore the lens will readily advance through a sufficient aperture of its capsule, although the wound of the cornea is obviously too confined*; but in the latter, the cornea

* I am far from meaning to commend a section parallel to the lower border of the pupil; the fact is merely stated, that the reason may appear why the section of a proper situation and figure should also be of a proper extent.

retaining two-thirds of its circumference entire, the effect of pressure is only to preserve the contact between the iris and cornea, which took place on the evacuation of the aqueous humor, and to render the cornea a perfect valve upon the aperture of the pupil. That this is the effect it has, is demonstrated by a common occurrence, viz. the bulging of the iris at the inferior border of the pupil. The lens, upon pressure of the globe, being unable to pass the pupil, pushes this membrane before it, where it has lost its support by the division of the cornea. The operator, observing this, supposes that the capsule of the lens is imperfectly opened, and it may be so; but if it were removed entire from the face of the lens, the same thing would happen, and continued or increased pressure have no other effect than that of continuing and increasing the distension and protrusion of the iris. If the section of the cornea be equal to its semi-circumference, the effect of pressure is to dilate the pupil, and permit the escape of the lens. The iris has been supposed in some cases to resist the passage of the lens, and it is probable the opinion may have arisen from a circumstance similar to that which I have endeavoured to explain; but the truth is, that the iris is perfectly passive, and never, in my belief, forms an impediment to the passage of the lens, where it has lost the support of the cornea.

To give the section the situation and extent required, it should describe a curve similar to that of

the margin of the cornea, equidistant about one line from the sclerotic, commencing at the same distance above the transverse diameter of the cornea, and terminating a little below that diameter on the opposite side.

Incised wounds of the cornea are well disposed to heal by the adhesive inflammation, and the structure of that membrane is favourable to the close and complete apposition of their edges. A portion of the lymph uniting the cut surfaces is generally effused between the conjunctiva and cornea to a small distance beyond them, but this is in a little time absorbed, and the cicatrix becomes but faintly visible, forming a very delicate opaque line. But if the lens has been forcibly delivered by a small section, the iris is compressed and bruised in its passage, and instead of recovering its plane, the lower border of the pupil falls between the edges of the wound, and partakes of the inflammation raised to heal it. It does not actually prolapse, but by its intervention of the edges, forms a part of the cicatrix, so as to elevate the flap, and distort the figure of the cornea, and by its co-adhesion with the latter to render it more or less extensively opaque from the section upwards. This tendency of the iris to inflame and unite with the cornea is universal, where it has been stretched, compressed, or bruised by the lens in its passage; the injury is often aggravated by the use of instruments to open the capsule and extricate the lens, which entangle in the iris, or abrade the cornea on

its interior surface, so that the opacity eclipses the pupil; but where the iris has been bulged and protruded by the lens during the operation in the manner before described, the prolapsus which ensues is sometimes of such magnitude as to draw the upper segment of the pupil into the wound, and thus completely to close it and obliterate the anterior chamber.

I have now pointed out, as faithfully and as clearly as I am able, what has appeared to me to be the principal cause of the difficult extraction of the cataract, and its consequences. The means of preventing it are sufficiently obvious; and it will be sincerely gratifying to me, if these observations should spare others the painful necessity of occasionally witnessing evils which they might have prevented, but are unable to relieve,

It is difficult in speaking of an operation, in the conduct of which so many minute circumstances demand attention, to refrain from entering into detail. On such points, however, few persons can be instructed with advantage, for all are competent, and in the course of their experience, compelled to form a judgment of their own; which will be more readily and more accurately formed by an appeal to practice than to books. One observation only, I will add, of general importance to the perfection of the operation. Some surgeons simply incise the capsule near to the lower border of

the pupil, for the egress of the lens, and leave the remainder of it entire, occupying the centre of the pupil, in the expectation that it will remain transparent. This is not realized by the event; the capsule invariably turns opaque after the escape of the lens, and renders the operation, for a time at least, imperfect. Whatever operation for the cataract is selected, whatever instrument is employed for the aperture of the capsule, it is essential, that the central portion of this membrane should be extensively lacerated. To conclude, the operation of extraction by the section of the cornea in its semi-circumference, is the only one properly adapted to the firm caseous and hard cataract. Although pregnant with fortuitous and unexpected circumstances, embarrassing to surgeons, who have not enjoyed frequent opportunities of performing it, it offers no difficulty which coolness and perseverance will not soon overcome; and when executed with the confidence and adroitness which experience will infallibly give, it is, whether considered in design or in effect, one of the most unexceptionable, if not the most perfect of our performances, in the department of operative surgery.

The following is a concise summary of the contents of this and the preceding memoir.

I. The various textures of cataract admit of distinction into capsular and lenticular, single or

in combination. The lenticular cataract is either fluid, flocculent, caseous, hard, or of mixed consistence.

II. To the two former and the soft of the caseous species, the operation of forming a central aperture in the capsule, for the solution of the lens in the aqueous humor, is well adapted: to the firm of the caseous species and the two latter it is inapplicable.

III. The introduction of the needle through the cornea is preferable to passing it through the sclerotic, in performing this operation; except when, in consequence of a previous operation, or from other cause, the capsule is opaque, and the lens has undergone a partial absorption, and lies at a distance from the pupil.

IV. The operation of couching, which is, strictly speaking, applicable only to firm caseous and hard cataracts, is objectionable on account of the injury done to the organ, admitted in the theory of the operation, and evidenced by a destructive inflammation, and an ultimately impaired state of the retina, by which it is frequently succeeded.

V. Where the space occupied by the aqueous humor is narrowed by the considerable convexity of the iris, the firm cataract may be dislodged from its capsule, placed in the anterior chamber

by the needle, and safely extracted by a section of the cornea.

VI. The fluid, flocculent, soft caseous and unadhering capsular cataract, congenital or adult, may be safely and expeditiously extracted through a quarter section of the cornea, by freely opening the capsule with the point of the knife, and afterwards depressing the margin of the pupil with the back of the scoop.

VII. The extraction by a quarter section should never be attempted but in cases where the consistence of the cataract is manifestly soft, as its success depends on the susceptibility of the cataract of a change of figure, or its ready escape piecemeal. It is better adapted to the opaque capsule if unadhering, than the operation with the needle.

VIII. Where the capsule of the fluid, flocculent, and soft caseous cataract is transparent, the operation of extensively rending it and dissipating its contents with the needle passed through the cornea, is efficient, and leaves the pupil in the most perfect state.

IX. The mixed, firm caseous, and hard cataract require the section of the cornea in its semi-circumference, being unsusceptible of an alteration of figure,

X. The inflammation which follows the *easy* extraction of the cataract is never hazardous, very seldom severe. That which ensues after the *difficult* extraction, frustrates in a great degree, if not entirely, the object of the operation, though the cataract be completely removed.

XI. The cause of the difficulty is the insufficient aperture of the cornea; the consequence of it, the implication of the iris with the wound of the cornea, and the participation of the former in the inflammation of the latter: the consequent co-adhesion of the two, and the partial or total obliteration of the anterior chamber, with diffused opacity, greater or less, of the cornea.

XII. The principle of the operation of extraction is unexceptionable: the section of the cornea should be everywhere about one line distant from the sclerotic; it should be crescentic, and should commence on a level with the superior border of the pupil. The aperture of the capsule should be large and central, by laceration, not by incision of that membrane.

I trust that the observations contained in this paper, may afford satisfactory evidence of the justness of the principle, which I have endeavoured to establish. I by no means assume, that my experience is sufficiently extensive, or my description and arrangement sufficiently accurate, to lead

the surgeon up to a prompt and unfailing decision of the most appropriate operation in every case. The subject probably does not admit of being reduced to unerring rules*. I have, however, pointed out a path, which I believe may be pursued with advantage; and if these observations should induce attention to the subject, I entertain no doubt that the several textures of cataract will ere long be distinguished with accuracy, and that thus the discretion of the surgeon, becoming subservient to his art, will render it in the highest degree efficacious.

* "Simple views, whether of health or disease, however ingenious, can seldom be just. They have their origin in the spirit of system, not in the careful study and faithful enumeration of the various and complicated circumstances, which concur in the production of all vital phænomena."—*Thomson's Lectures on Inflammation.*

A CASE
OF
ANEURISM
OF THE
GLUTÆAL ARTERY,

CURED BY TYING THE INTERNAL ILIAC.

By W. STEVENS, Esq.

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AND SURGEON IN THE ISLAND OF SANTA CRUZ.

COMMUNICATED BY

B. TRAVERS, Esq.

Read Sept. 27, 1814.

UNTIL very lately, surgeons were unacquainted with the use of the inosculating vessels, and dreaded to tie even the smaller arteries. So completely were they fettered by the fear of gangrene, that a person with aneurism of the brachial, or popliteal artery, had no alternative, but to submit to amputation, or die from hemorrhage; and those who had the disease in the larger vessels were allowed to perish, without even an attempt being made to save them.

To the surgeons of the present day we are indebted for the improvements in this part of the profession. Even the celebrated Cheselden doubted the surgeon who told him, that he had tied with success the brachial artery. Bromfield stigmatized the tying the femoral artery, as an extravagant proposition. Dr. Monro, who was an excellent anatomist, says, that it is "dangerous to trust to common anastomosis round the elbow:" and intimates, that the success in tying the brachial artery, was chiefly owing to a *lusus naturæ*. He little expected that, in a few years, surgeons, without any assistance from these irregularities of nature, would tie not only the brachial, but the femoral, the axillary, the subclavian, the carotid, and the great iliac arteries.

These are the most splendid improvements in modern surgery; improvements for which we are indebted to Abernethy, A. Cooper, Lynn*, Scarpa,

* A surgeon in attempting to extirpate the parotid gland, opened so many vessels about the angle of the jaw, that the patient was in danger of expiring from hemorrhage. Mr. Lynn, who was present, prevented the bleeding, by tying the trunk of the carotid artery on the fore part of the neck. This occurred in the Westminster Hospital 15 years ago. I am sorry to add, that the case was not successful. The person died three weeks after the operation. Mr. Abernethy tied this artery when accidentally wounded, but the patient died of inflammation of the brain. Mr. A. Cooper, was the first who ventured to tie the carotid artery for aneurism of this vessel. Mr. Travers was the second who tied

and particularly to Mr. John Bell, who led the way to these operations by his correct and animated description of the powers of the inosculating arteries,

The large arteries are more vascular, and more subject to disease than the smaller vessels. The glutæal is a large artery; from its situation liable to wounds, from its size subject to aneurism. It is true, we have seldom heard of aneurism of the glutæal artery; not that the disease has never existed; but because it has hitherto been fatal; and the history of almost every unsuccessful case is quietly inurned with the unfortunate patient.

Dr. Jeffray, of Glasgow, was consulted in a case where the glutæal artery had been wounded. He urged the propriety of tying the vessel, where it had been injured. This sensible advice was rejected, other surgeons were consulted; and when the friends at last consented to have the artery tied, it was too late: while Dr. J. was preparing for the operation, the tumor burst; and the young man in a few moments expired.

One of the first surgeons in London had a patient with glutæal aneurism. The tumor was large; allowed to burst; and the person bled to death.

It was tied successfully, since which it has been tied with success by Mr. Dalrymple, of Norwich; and Mr. John Bell.

I sincerely trust that the following case may be the means of preventing such an occurrence in future.

Maila, a negro woman, from the Bambara country in Africa, was imported as a slave into the West Indies, in the year 1790. She was purchased for the estate Enfield Green; now the property of the heirs of Patrick Ferrall, Esq. I saw her first in the beginning of December, 1812. She had a tumor on the left hip, over the sciatic notch. It was nearly as large as a child's head, and pulsating very strongly. She could assign no cause for the disease. It had commenced about nine months before, with slight pain in the part; and had gradually increased to its present size. She was now much reduced, in great misery, and ready to submit to any operation.

Dr. Lang, the medical attendant on the estate, had seen this woman soon after the commencement of the disease, even then it was too distinctly marked to be mistaken. Dr. Lang is a good surgeon; the friend and late pupil of Mr. J. Bell. He did in this case, what most surgeons would have done: pronounced the disease incurable. The woman was returned from the sick-house to her hut, there to submit to her fate: to pass a few weeks of miserable existence; and then to expire from hemorrhage.

I was not ignorant that Mr. J. Bell had tied

the glutæal artery. The two cases, however, were very different. The one was an aneurism; the other, a wounded artery. The one was a constitutional disease; and the other a local affection. This is no idle or useless distinction. A surgeon may with propriety cut down upon a wounded artery, and tie it where it has been injured. John Hunter, Pott, and many others, learnt from dear bought experience, the danger of operating immediately above an aneurismal tumor*.

Compression, which may be useful in some situations, cannot be applied in aneurism of the glutæal artery. There is but one chance of curing the disease, and that is by tying the internal iliac artery, within the pelvis.

Mr. Abernethy, Mr. A. Cooper, Mr. Freer, and some others, had tied with success the external iliac; I had tied the internal on the dead body, and believed that it might be done with safety on the living. When Dr. Lang, and my friend Dr. Van Brackle, met me in consultation, on the case of Maila, I proposed this operation; they consented.

On the 27th December 1812, I tied the artery in the presence of Dr. Lang, Dr. Van Brackle, Mr. Nelthropp, and Mr. Ford, the manager of the estate.

* It was this which gave origin to Mr. Hunter's grand improvement of tying the artery at a distance from the disease.

An incision about five inches in length, was made on the left side, in the lower and lateral part of the abdomen, parallel with the epigastric artery; and nearly half an inch on the outer side of it. The skin, the superficial fascia, and the three thin abdominal muscles, were successively divided; the peritoneum was separated from its loose connexion with the iliacus internus and psoas magnus;—it was then turned almost directly inwards, in a direction from the anterior superior spinous process of the ilium, to the division of the common iliac artery. In the cavity which I had now made, I felt for the internal iliac, insinuated the point of my fore-finger behind it, and then pressed the artery betwixt my finger and thumb. Dr. Lang now felt the aneurism behind; the pulsation had entirely ceased, and the tumor was disappearing. I examined the vessel in the pelvis: it was healthy and free from its neighbouring connexions; I then passed a ligature behind the artery, and tied it about half an inch from its origin. The tumor disappeared almost immediately after the operation, and the wound healed kindly. About the end of the third week, the ligature came away, and in six weeks the woman was perfectly well.

When I was about to leave the West Indies, in the early part of May last, I called upon this woman; she was then in good health, grateful for her recovery, expressing her astonishment that so dreadful a disease on the back part of her body,

could be cured by making a wound in a part directly opposite.

This I believe is the first time that the internal iliac artery has been tied; the operation was neither very difficult nor very tedious. The woman did not complain of much pain; and I am certain she did not lose one ounce of blood.

I found no difficulty in avoiding the ureter: when I turned the peritoneum inwards, the ureter followed it. Had it remained over the artery, I could easily have turned it aside with my finger.

In performing this operation, I used only one ligature, because I believe that one ligature is perfectly sufficient for any artery. When we expose the iliac or any other great vessel, it is necessary to separate the artery from its surrounding connexions, only for a small space: a space no larger than just sufficient to allow the insinuation of the fore-finger, behind it. With the point of this finger we raise the vessel, and examine it: with a small blunt or aneurism needle, pass a ligature behind the artery, draw it to the upper part of the vessel, where it is surrounded by its cellular substance, nourished by its vasa vasorum; and tie it there. When we tighten the ligature, the opposite surfaces of the internal coat are brought into immediate contact; the ligature wounds the internal coat and thus excites inflammation. When

the internal surfaces are inflamed, and in contact, they adhere to each other, and then only is the patient out of danger.

It often happens in aneurism, that the artery, even at a distance from the tumor, is so completely ossified, that it will not inflame, and consequently not adhere; the ligature soon comes away, and is followed by a secondary hemorrhage.

Though we have a ligature beneath this part, it certainly can do no good; it cannot prevent the hemorrhage, as the bleeding is nearer to the heart.

The vile practice of insulating a large portion of an artery, and then only half tying it; the use of the four ligatures, and other unhappy contrivances, have been very justly and very happily criticised by Mr. John Bell;—but even Mr. J. Bell uses one ligature too many: he, like Mr. Abernethy, and many surgeons of the present day, ties the artery with two ligatures; and cuts it across betwixt them.

By placing the artery in the same situation, that it is in on the face of a stump, it was expected that secondary hemorrhage would occur as seldom after the operation for aneurism, as it does after amputation; the circumstances, however, are very different: in cases which require amputation, though

every other part of the limb may be diseased, the arteries are generally healthy; and when properly tied they seldom bleed. In aneurism, though every other part of the system is healthy, the arteries are generally diseased. It is this diseased state, this premature old age of the arterial system, which is the cause of aneurism, and of the hemorrhage which is so frequent and so troublesome after the operation.

If hemorrhage after the operation for aneurism is produced, not by the position of the artery, but by the diseased state of the arterial system, the double ligature can do no good. If an artery is diseased, the lower ligature can not make it healthy: though it has retracted, it will not adhere; though we have two ligatures, they cannot prevent the secondary hemorrhage.

The surgeon who uses the two ligatures gives himself unnecessary trouble, his patient unnecessary pain, and leaves three extraneous bodies in the wound, while one only is necessary; the lower ligature insulates a portion of the artery; this insulated part remains in the wound as a foreign substance, so does the lower ligature; in truth this lower ligature can do no good by remaining in the wound; irritating and keeping it open, it does much mischief.

Even in aneurism, the artery where we operate is

sometimes healthy : when such an artery is properly tied we have nothing to fear from secondary hemorrhage ; its cavity is soon obliterated by adhesion ; and the natural position of the vessel is perhaps more favourable for this process, than when the artery is retracted *.

This was the only case of aneurism that I either saw or heard of during a residence of nearly four years in the West Indies. In St. Croix, St. Vincent's, St. Kitt's, and some other islands, so seldom is it met with, that I know practitioners, who, during thirty years' extensive practice, have never seen a case of aneurism, stone, or any other disease produced by the deposition of calcareous matter.

What is aneurism that it should be so frequently met with in some countries, so seldom in others ? Is it a disease produced by "violent passions of the mind—the improper use of spirituous liquors—the excessive use of mercury—too much exercise—blows, and lifting heavy burdens ?" If it is brought on by these causes, why is it not met with indiscriminately all over the world ? Why are the ar-

* I express my disapprobation of the double ligature, because I believe it to be a bad practice, a practice that is radically wrong, and has nothing to recommend it but the respectable names of Mr. John Bell, Mr. Abernethy, Mr. A. Cooper, &c. No one can value these gentlemen more highly than I do ; every surgeon must feel indebted to them for the good they have done to the profession. As an individual I feel grateful to these gentlemen for much personal kindness.

teries of the West Indian so free from aneurism, and those of the European so subject to the disease?

The arteries of the European, who has been seasoned to the West Indies, of the Creole and the Negro, are as subject to the above causes as the arteries of the European, but they are not liable to aneurism.

It is not a disease "invariably formed by the rupture of the internal coats of an artery." The arteries of the West Indian are free from aneurism, though as subject as the arteries of the European to every kind of accident which might tear or rupture their internal coats.

When we pull a ligature in such a manner as to rupture the internal coats, and then withdraw the ligature, the artery does not become aneurismal. On the contrary, it is frequently followed by inflammation, adhesion and obliteration of the vessel. Such a rupture of the internal coats may cure an aneurism, but cannot produce it.

Suddenly extending the joints, severe blows, or violent spasms of a muscle, may occasionally rupture an artery, particularly if the vessel has been weakened by ossification, or any other disease. Such an accident is seldom met with, and when it does occur, it is not aneurism, but a ruptured ar-

tery; the swelling forms immediately after the accident; the tumor seldom pulsates; and is generally diffused.

The history of aneurism is very different from all this. It is a constitutional disease, and comes on slowly. Its immediate cause, in most cases, is the deposition of a foreign substance in the internal coats of the artery;—"a vile calcareous matter," which, under particular circumstances, produces irritation, inflammation, ulceration, and complete destruction of a part of the internal coats. Whilst this disease is going on in the internal surface, the external coats are beginning to dilate; in proportion as they dilate, they become thinner; and it is now that nature, as if aware of the danger, begins to strengthen the artery by the deposition of a new formed substance—a substance which so completely resembles the original coats, that the one has almost uniformly been mistaken for the other.

In Glasgow, under the auspices of the late Mr. Allan Burns, I had many opportunities of examining this diseased state of the arterial system. In subjects who were upwards of thirty, I almost uniformly found the arteries ossified, brittle, and so weak, that on attempting to inject them minutely, they almost invariably burst.

The farther we advance in life, the more we are

subject to this diseased state of the arterial system, and its attendant aneurism. We never meet with it in children ; seldom in youth ; but very often in old age. It generally commences about the age of 25, or 30 ; previous to this period the arteries are healthy, and not subject to aneurism.

In the West Indies, I have examined the arteries of some aged bodies, and have uniformly found them healthy, free from ossification, and every other kind of disease. Such arteries are not subject to aneurism ; and when we tie them properly in wounds or in amputations, we are never troubled with secondary hemorrhage.

London,

Sept. 21, 1814.

REPORT

OF THE

PRINCIPAL NATURAL DISEASES

**THAT HAVE PREVAILED AMONGST THE CHILDREN OF
THE ROYAL MILITARY ASYLUM AT CHELSEA, FROM
ITS FIRST ESTABLISHMENT IN 1804, TO THE 1ST OF
JANUARY, 1814, INCLUDING A PERIOD OF TEN
YEARS, WITH SOME REMARKS THEREON.**

By P. MACGREGOR, Esq.

**SURGEON TO THE INSTITUTION;
SURGEON TO HIS ROYAL HIGHNESS THE DUKE OF YORK;
AND ASSISTANT SURGEON TO THE LOCK HOSPITAL.**

**COMMUNICATED BY
DOCTOR ROGET.**

Read June 19, 1814.

THERE are diseases, such as small-pox, measles, hooping-cough, chicken-pox, &c. which may properly be defined the natural diseases of the human body, as they are known in general to affect most of our species once during life, in this, and every other country where the body is exposed to that peculiar state of the atmosphere which produces them, or to the matter of contagion arising from persons labouring under them.

At the Military Asylum 1200 children (800 boys and 400 girls) are at present fed, clothed,

and educated under the protection of government. They are the children of soldiers of the regular army, and are admitted from the age of five to twelve years. The boys are sent out from the Asylum to the army, or to the trades they choose to adopt, when they attain the age of fourteen years; and the girls are sent at the same age to service.

My situation as surgeon to this very extensive establishment for children for a period of more than ten years, has afforded me some opportunity of observing whether measles, hooping-cough, and scarlet fever have been more fatal and severe at the Royal Military Asylum, in the children male and female, that have undergone vaccination, than in those that have been subjected to the casual, or inoculated small-pox.

The result of the inquiry, so far as my opportunities have enabled me to form an opinion, leads to the conclusion, that measles, hooping-cough, and scarlet fever have not been more fatal, or even more severe, at the Military Asylum, in cow-pox, than in small-pox subjects.

I have also further observed at what seasons, and under what other circumstances, measles have been most fatal and severe; and, on the contrary, under what circumstances this natural disorder has generally passed through its progressive stages.

to a favourable termination, with least injury to the constitution of the individual.

Since the introduction of inoculation for the small-pox into this country, about the year 1721, that terrible disease has become much less fatal and severe. The discovery of vaccination by Dr. Jenner, made public in 1798, as a substitute for the small-pox, has now been the means of that disease having nearly disappeared amongst us ; and if the wise regulations proposed by the governments of different countries be sufficiently enforced and fully countenanced by the medical profession, we may hope, ere long, notwithstanding the various objections that have been urged against vaccination, to see the small-pox entirely eradicated from the list of diseases prevailing in this and most other parts of the globe,

The measles is the next most fatal and severe disease, and probably the most infectious, which the rising generation in this country have to encounter in their progress through life. The practice of inoculation for this disease with a view of rendering it less fatal and severe, has been tried by Dr. Home, of Edinburgh, and also I believe by others since he first published his account of the experiment. It has not been found to answer the favourable expectations that were formed respecting it, and has therefore fallen into disuse, having never been practised, but on a very limited scale.

The suggestion of any general means, that may be likely to lessen the fatality that usually attends the disorder in question, may therefore be deserving of some consideration.

I have observed, that measles have been more or less fatal and severe, according to the season of the year at which they happened to prevail; though certainly some years they have been milder at the same season than in others; and the causes of such marked differences, though generally observed, have not, as far as I know, been satisfactorily accounted for. But it is deserving of notice that, amongst the children at the Military Asylum, measles have been comparatively milder, and invariably less fatal, when they have prevailed in the months of June, July, August, and September, than when they have been rife in the other months of the year, and that three deaths only out of the sixteen deaths from this disease, stated in the annexed return, have occurred in the months alluded to; though it repeatedly prevailed, at least as extensively in the summer season during the last ten years, as it did at the other periods of the year.

It also further appears from the Infirmary records, that two of the children who died in the summer season, were born in the West Indies, and were so delicate and unhealthy, that they might probably have been carried off by the first

severe disease that attacked them after their arrival in this country*.

It has, I believe, been generally admitted, that measles are milder in warm than in cold climates; and we know that the parts of the body most seriously affected in the disease, and contained within the cavity of the chest, more speedily recover from their effects in summer, than in winter.

If then it is found by the observation of others who have sufficient opportunity of ascertaining the fact correctly, that measles, when they occur in this country in the summer season, are invariably, or at least generally, less fatal and severe than when they prevail during the other seasons of the year; and that they are also known to be milder in warm climates than in ours; might not many lives be saved, and the disease be made compa-

* In the 3d Number of the London Medical, Surgical, and Pharmaceutical Repository, I find a statement, on the authority of Mr. Field, the Apothecary of Christ's Hospital, which corresponds very much with what has occurred at the Military Asylum respecting the mildness of measles when they prevail in this country during one of the four months of June, July, August, and September. I shall transcribe it in the words of the reporter: "In Christ's Church Hospital, measles prevailed in September 1807, July 1810, and September 1812. The total number affected was 103, out of which there were no deaths immediately arising from measles, although three died of croup upon the termination, or as a sequela of the disease."

relatively milder, by exposing healthy children who may have undergone previous preparation to the contagion of measles early in the summer season, at the age which may be found from experience to be the most safe, for passing through the various stages of the disorder favourably?

RETURN of the principal natural Diseases that have prevailed amongst the Children of the Royal Military Asylum, at Chelsea, from the 1st of January, 1804, to the 1st of January, 1814.

Number of Children who have had the Casual or Inoculated Small-Pox previous to their admission into the Asylum	1550
the Cow-Pox before, and since their admission into the Asylum	891
Measles since their admission into the Asylum	358
Hooping Cough since their admission, so severely as to be included in the Sick Return	150
the Scarlet Fever in October, November and December, 1813	131
Measles after Small-Pox since their admission	210
Measles after Cow-Pox since their admission	148
Number of Deaths from Measles after Small-Pox	11 or 1 in 19
Measles after Cow-Pox	5 or 1 in 29
Number of Children who have had the Hooping Cough after Small-Pox since their admission	110
after Cow-Pox since their admission	40
Number of Deaths from Hooping Cough after Small-Pox	4 or 1 in 27.
after Cow-Pox	*2 or 1 in 20.
Number of Children who have had Scarlet Fever after Small-Pox	80
after Cow-Pox	51
Number of Deaths from Scarlet Fever after Small-Pox	4 or 1 in 20.
after Cow-Pox	2 or 1 in 25.
Number of Cases of Dropsy that succeeded Scarlet Fever (in Small-Pox subjects 5—in Cow-Pox subjects 2)	7 or 1 in 19.
Number of Deaths from Dropsy succeeding Scarlet Fever (a Cow-Pox subject)	1

* It is proper to notice, that this is rather at variance with the conclusion that has been drawn respecting the mortality from Hooping Cough in the Children who have previously had Cow-Pox.

ADDITION TO THE FOREGOING PAPER,

*Being Extracts from Letters to Dr. MARCET, from
WILLIAM HENRY, M.D. F.R.S. Physician
to the Infirmary at Manchester.*

Manchester, Jan. 18, 1814.

ON the subject of your inquiry respecting the comparative fatality of measles, at this and former periods, I regret that I have not been able to obtain such full and accurate information, as I could have wished. One parish register contains the account of burials at one church only (the Collegiate Church); and at this church the practice of annexing, to the names of persons interred, the disorder of which they have died, was discontinued for a long series of years, and was revived only about two years ago. The proportion, however, of deaths from measles, to the total number of deaths registered at the same church about 40 years ago, may, fortunately, be gathered from Dr. Percival's Medical and Experimental Essays, and is shewn by the following table.

	Annual Average of Deaths by Measles.	Annual Average of Deaths by all Disorders.
From 1754 to 1758	21	651
1758 to 1764	10.6	639
1764 to 1769	9.6	639
1769 to 1774	21.6	651
Total	62.8	2600

During the two last years, the total number of deaths, and of deaths ascribed to measles, were as follows :

	Deaths by Measles.	Total Deaths.
1812	60	911
1813	18	929
Average of two years	39	920

It would appear, therefore, on comparing the results of the first table, with those of the second, that the fatality of the measles has been much greater on an average of the years 1812 and 1813, than on the average of 20 years, from 1754 to 1774 *; for 2600 : 62.8 :: 920 : 22.2 instead of 39, the actual average. But taking the interval from 1769 to 1774, the average proportion of fatal cases of measles to the same total (920) will be found to rise as high as 30.5. And if the documents had been furnished for a still shorter interval, it is probable that an average might have been obtained, fully as great as that of 1812 and 1813; for the mortality of the measles, as every medical practitioner knows, varies widely with the nature of the prevailing epidemic.

The books of our Infirmary and Dispensary supply no data, that can be of use in determining this question; for the poor here are but little in

* The year 1760 is not included in Dr. Percival's Tables.

the habit of applying for medical aid in the measles. During the last quarter of 1813, three cases only of measles are registered, as having occurred among the out and home patients. I have applied, therefore, to almost every respectable surgeon and apothecary in Manchester, for the result of his experience on this subject among the higher and middle classes; and the reply has been, without exception or hesitation, that no increased fatality from measles has been observable in this district, since the introduction of the cow-pock. In this judgment, my father, who can look back upon a very extensive practice in the diseases of children for 60 years, entirely concurs; and Mr. Holland, of Knutsford, whose opportunities and qualifications for making valuable observations are unusually great, has expressed the same belief in a letter to me, which I inclose.

TO DR. HENRY.

MY DEAR SIR,

In answer to your inquiry "whether measles have been more fatal, or generally more severe since the introduction of vaccination," I can have no hesitation in saying that, in the circle of my practice, this has not been the case. Thirteen years have now elapsed since the cow-pox was introduced into this neighbourhood; and during the

whole of that time I have not, to the best of my recollection, inoculated a single child for the small-pox, that had not been previously vaccinated; and with the other practitioners in this part of the country, vaccination has been very generally substituted for small-pox inoculation. During this period, measles have been four times epidemic in this town and neighbourhood. On the first occasion, the symptoms were, in every instance, mild, as far as I had the opportunity of knowing. When the complaint appeared the second time, it was more severe, and several cases occurred in which the termination was fatal. There was however no difficulty in accounting for this. The complaint prevailed in the spring of 1807, when a long continuance of easterly winds had made catarrhal affections particularly frequent: and it excited no surprise that measles should then appear with unusual severity. When the wind changed, and the weather became milder, the character of the disease was altered; and no alarming symptoms accompanied it. In all the cases I saw, when we had the complaint frequent, the third and fourth time during the period I have mentioned, the symptoms were particularly mild; and I did not hear of a single case which occasioned the smallest alarm.

Believe me, dear Sir,

Your faithful friend,

P. HOLLAND.

Knutsford, Dec. 18, 1813.

Manchester, Jan. 21, 1814.

The church of St. John's is one at which the middle and higher ranks of our population are alone interred, and the nature of the diseases may therefore be considered as better ascertained.—I have put down the results in the form of a Table, the proportional numbers in the third column being calculated not by figures, but by the sliding rule, and therefore strictly correct only as to the first place of decimals.

The extraordinary fatality of the year 1812, may possibly have been owing in part to the prevalence of scarlet fever, which was also epidemic, and which probably occasioned many of the deaths set down to the account of the measles.

W. HENRY.

TABLE drawn from the Register of the Collegiate Church, Manchester, shewing the Proportion of Deaths from Measles, to Deaths from all Diseases.

[The two first Columns from a Table by Dr. Percival, in his *Essays Medical and Experimental*.]

Interval of Time.	Average Deaths from Measles during 1 year.	Average Annual Deaths from all Diseases.	Proportion of Deaths from Measles to Total Deaths.
From 1754 to 1758	21	651	3.2 in 100
1758 to 1764*	10.6	639	1.66 in 100
1764 to 1769	9.6	659	1.4 in 100
1769 to 1774	21.6	651	3.3 in 100
* Omitting 1760.			

Table from the Register of the same Church for 1812-13.

	Deaths from Measles.	Total Deaths.	Proportion of Deaths from Measles to Total Deaths.
During 1812	60	911	6.55 in 100
1813	18	929	1.94 in 100
Average of two years	39	920	4.25 in 100

Table from the Register of St. John's Church, Manchester.

During 1812	17	229	7.4 in 100
1813	4	250	1.6 in 100
Average of two years	10½	239½	4.35 in 100



REFERENCES TO THE PLATES.

Plates I, II, and III. Referring to the case of a Child retained in the Body of the Mother, are explained, p. 127.

Plate IV. Represents the Onychia Maligna, affecting the finger of a boy six years of age, as described, p. 135.

Plate V. Referring to the case of Obstructed Aorta, is explained, p. 301.

Plate VI. Represents the appearance of the Tubercular Eruption described in Dr. Bateman's paper, p. 225.

Plate VII. Is a representation of the *Pyrola Umbellata*, the Botanical Characters of which are given in p. 357.

Plate VIII. Referring to the case of Fractured Femur, is explained in p. 385.

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 ERRATA.

Page 160, l. 3. *for want, read do without.*

—— 309, note, *for wells, read draw-wells.*



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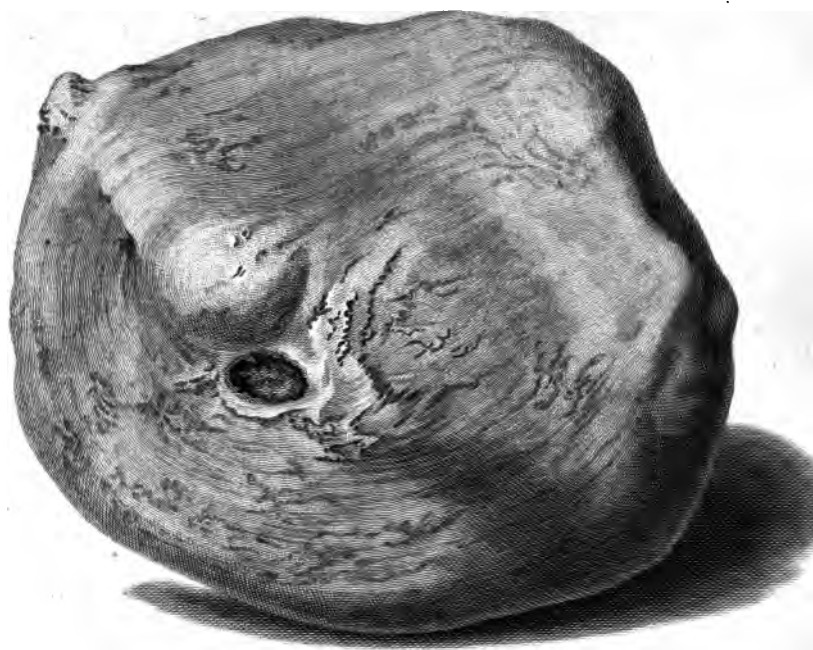
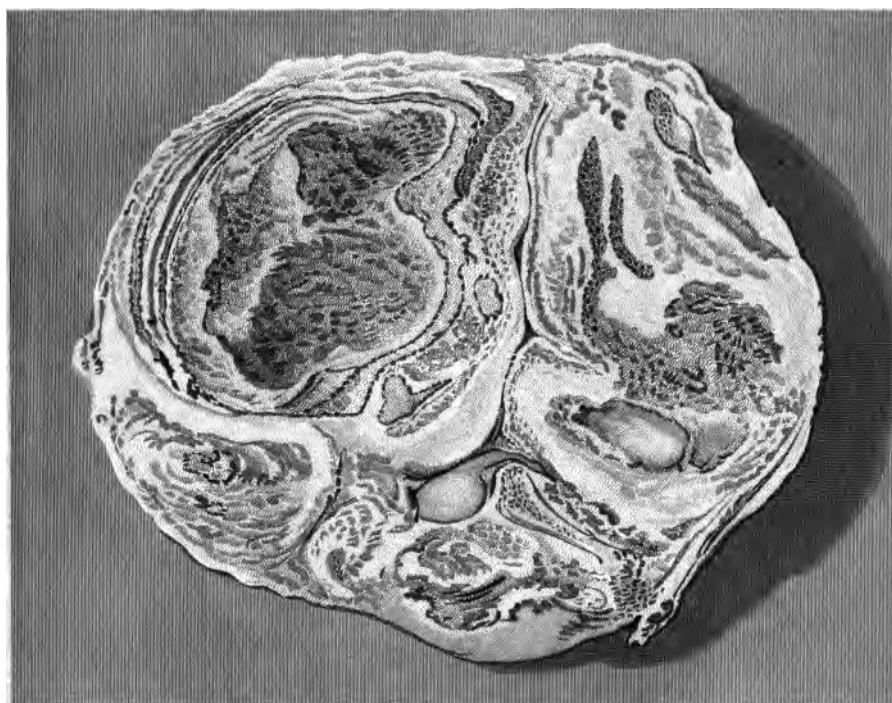


Fig 2.



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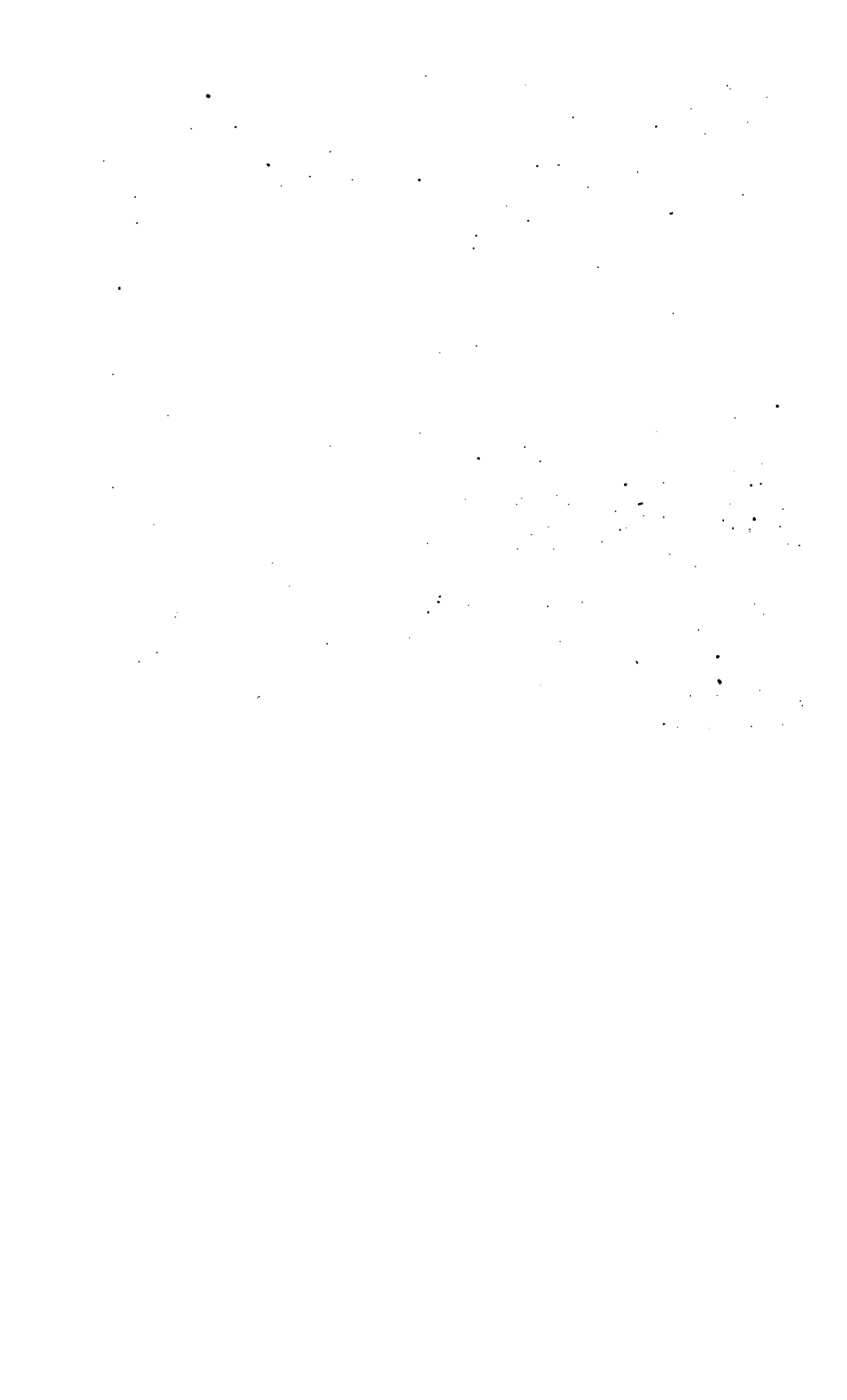


Fig. 1.

Plat. III.

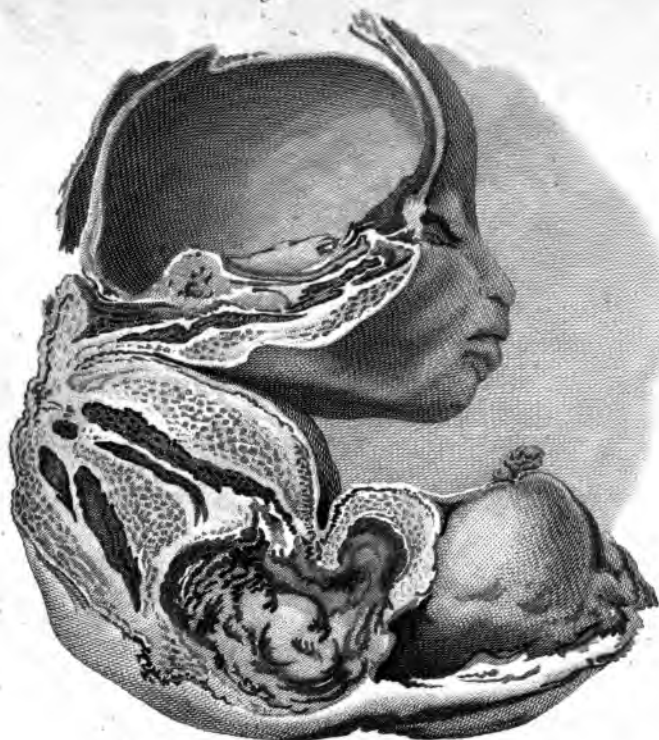
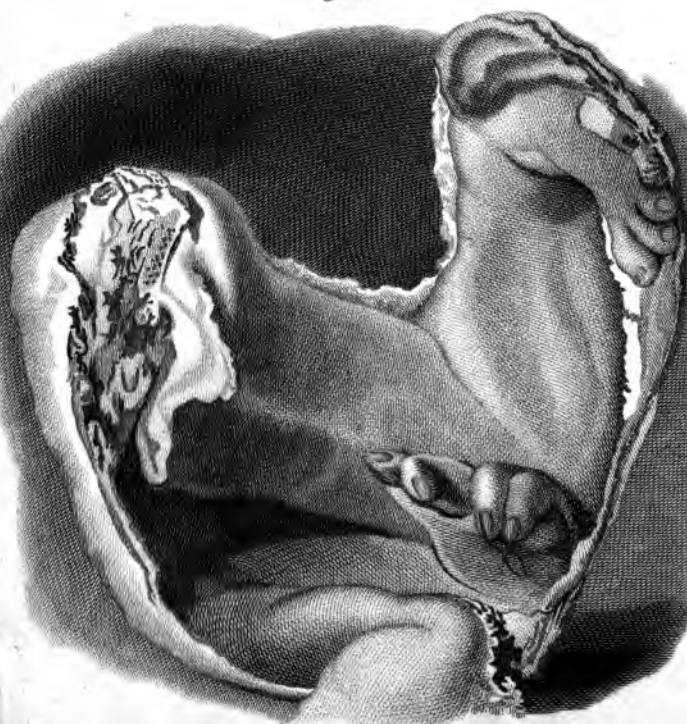


Fig. 2.



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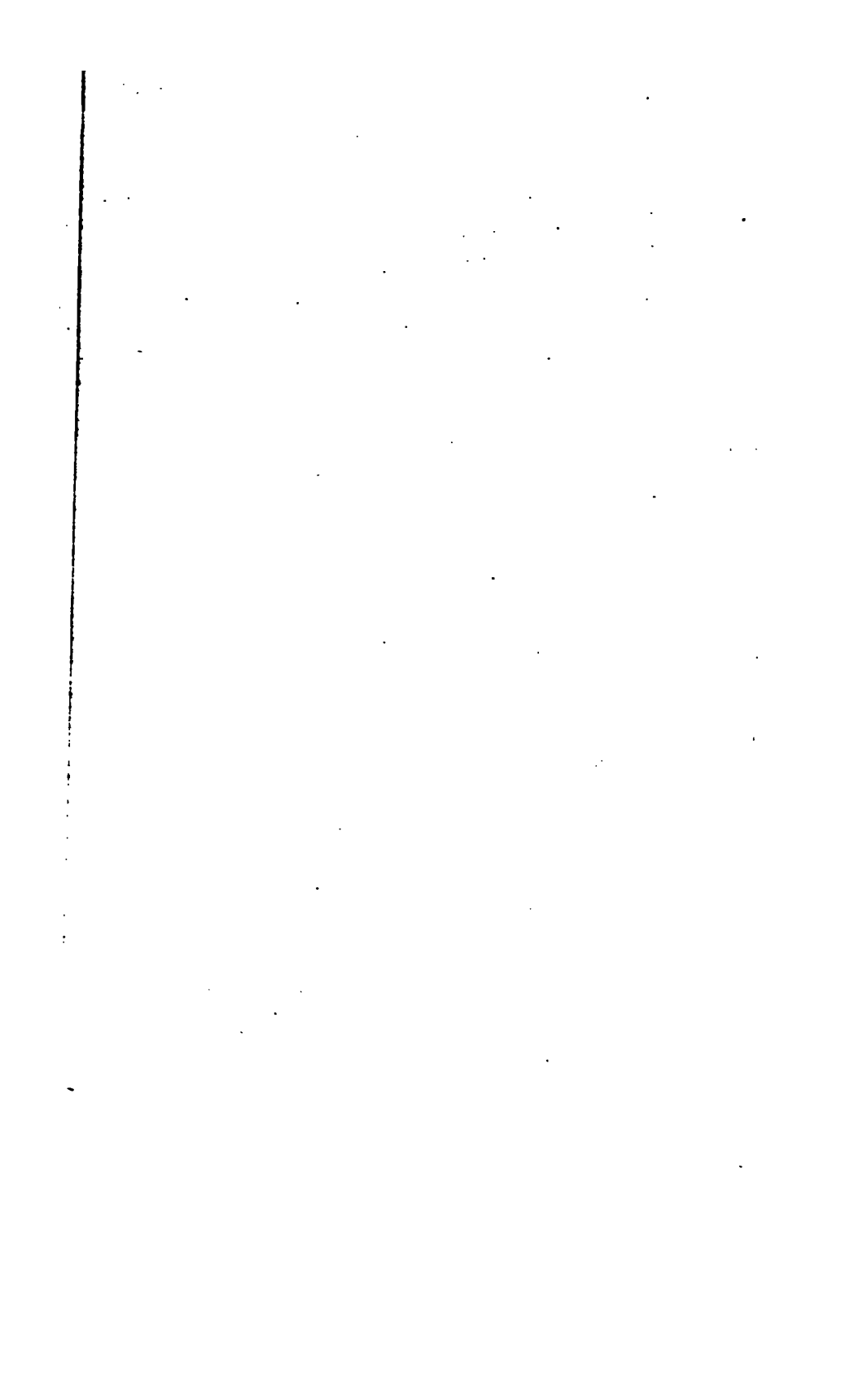


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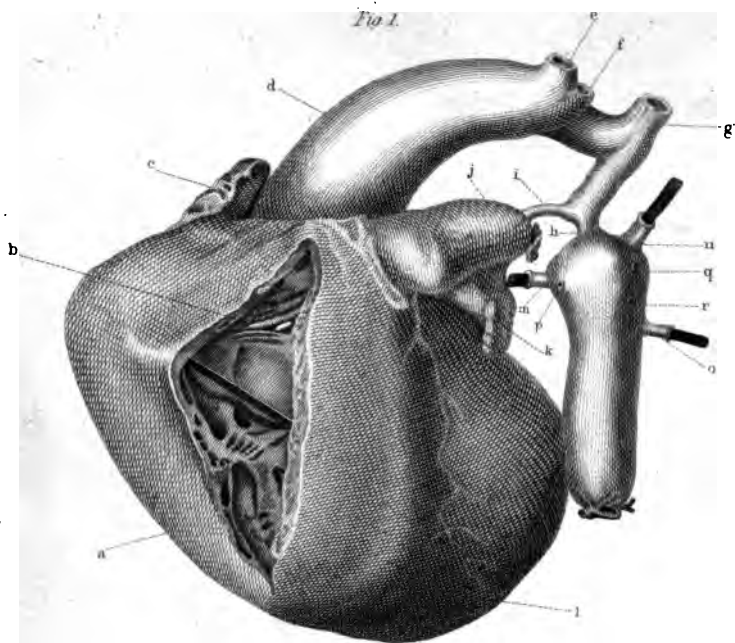


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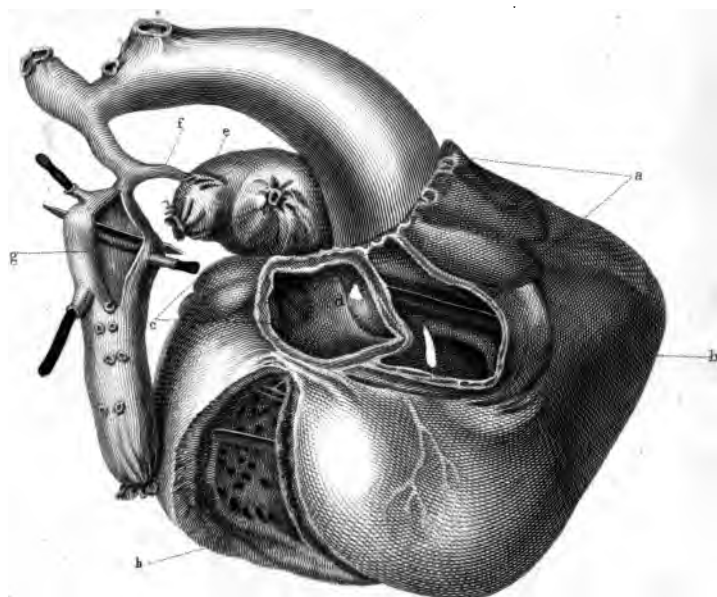
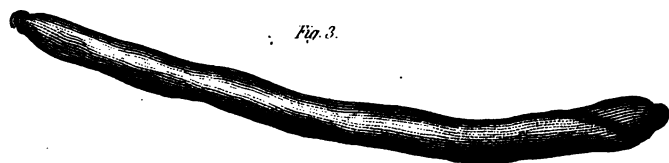
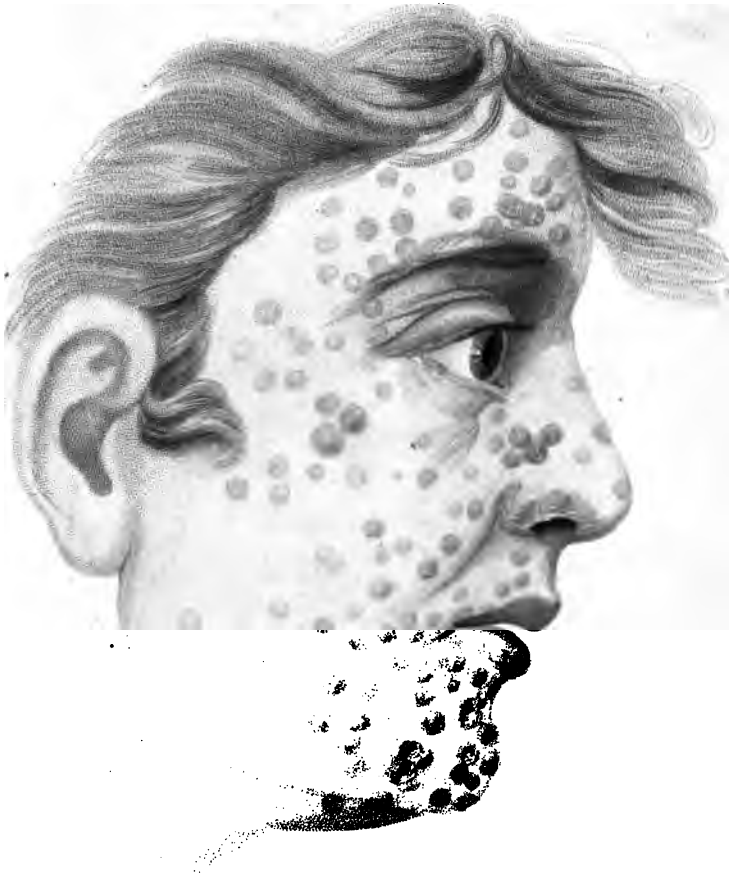


Fig. 3.





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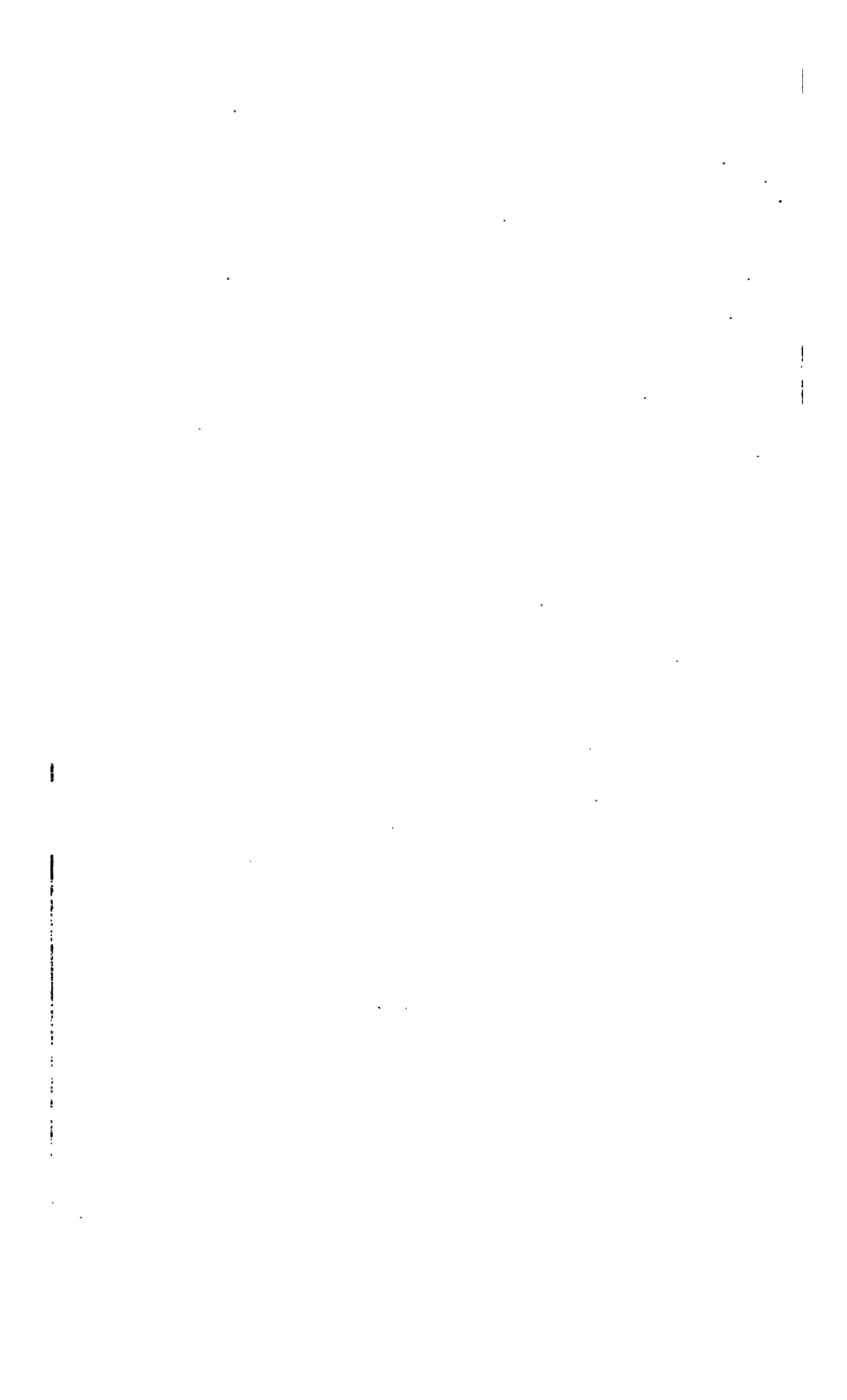




Fig. 2. (a) d.



Fig. 3.

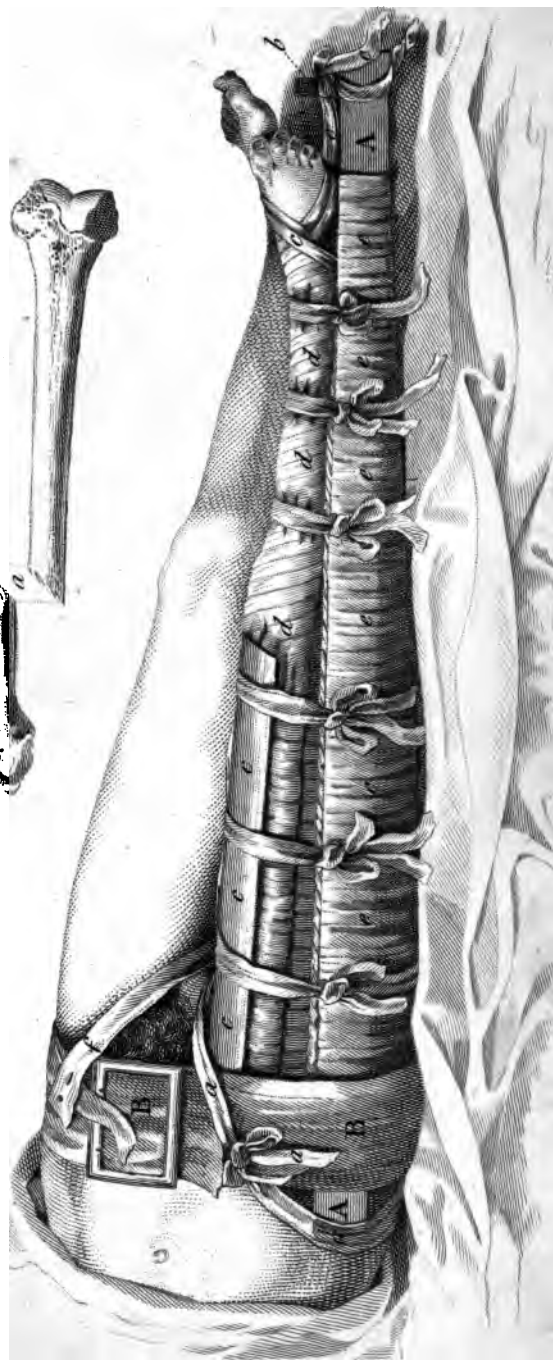
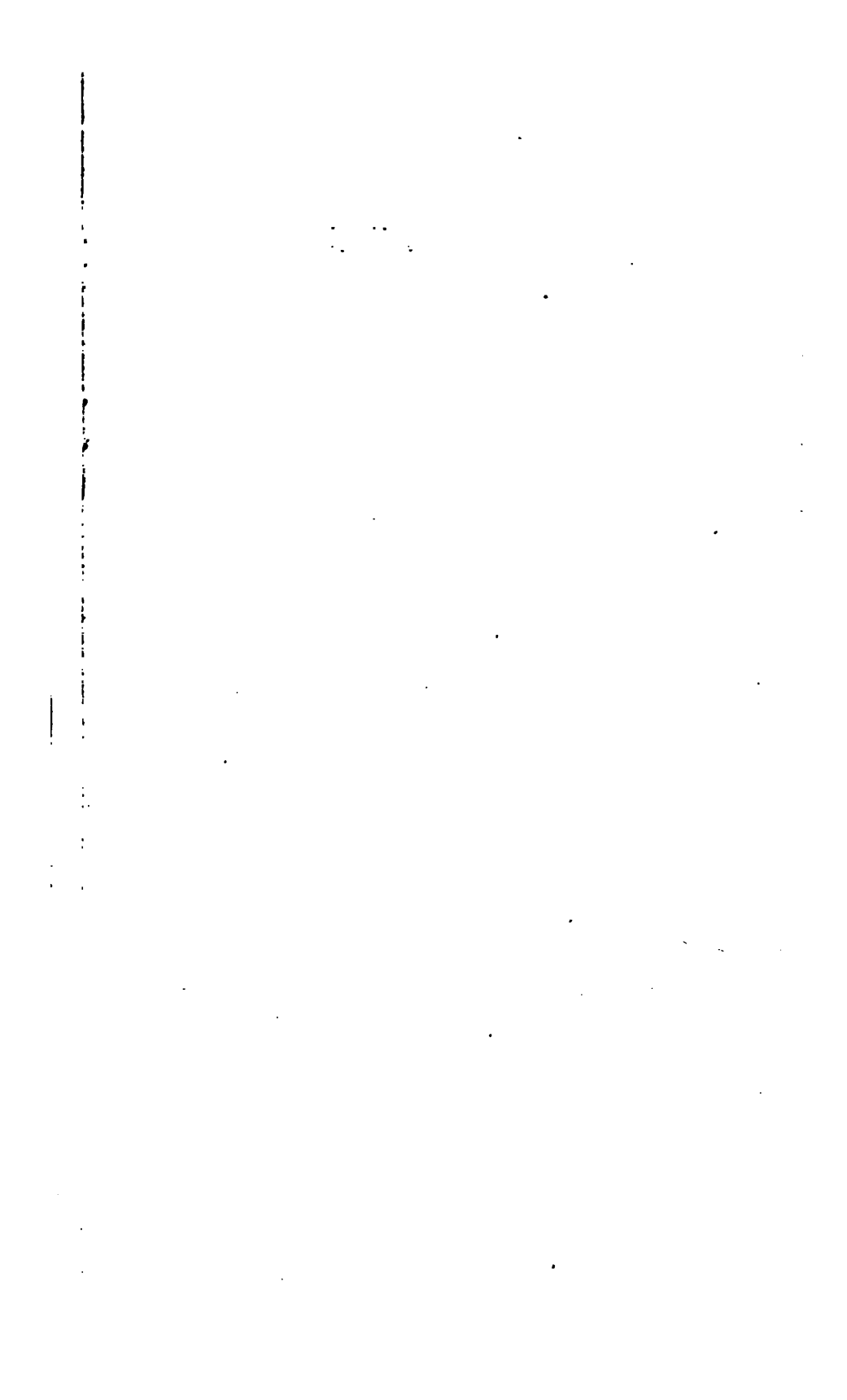


Fig. 1.







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